

# METHODS OF CHOOSING A CAREER

A DESCRIPTION OF AN EXPERIMENT IN  
VOCATIONAL GUIDANCE CONDUCTED ON  
TWELVE HUNDRED LONDON ELEMENTARY  
SCHOOL CHILDREN

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TO  
THE MEMORY OF  
ARTHUR JAMES, EARL OF BALFOUR  
K.G., O.M., F.R.S.  
FIRST PRESIDENT OF THE INSTITUTE  
WHO TOOK THE KEENEST INTEREST IN PROMOTING  
ITS VOCATIONAL RESEARCH  
AND TO  
THE TRUSTEES OF THE  
CARNEGIE UNITED KINGDOM TRUST  
WHOSE GENEROUS BENEFACCTIONS  
ENABLED THE EXPERIMENT HEREIN DESCRIBED  
TO BE CARRIED OUT  
THIS BOOK IS  
GRATEFULLY DEDICATED





## FOREWORD

I HAVE been asked, as President of the National Institute of Industrial Psychology, to write a foreword to this book. This I do gladly, as I can commend it without hesitation to the many who must share my conviction that in more scientific vocational guidance lies one of our brightest hopes for the improved welfare of humanity.

I should like to quote the following extract from a letter, written by a headmaster to one of the Institute's vocational staff, which has recently been brought to my notice: "The number of people nowadays who are at their wits' end to know what to do with their boys is appalling; and, realizing that my knowledge of the boy is imperfect and one-sided, and my knowledge of occupational requirements grossly inadequate, I always feel more or less of a charlatan when called upon to advise. My only consolation is that my advice is so rarely followed that there is no real cause for my distress."

This is unfortunately true; and the result is that a vast number of young people tumble into their occupations by chance, instead of being guided into them on grounds of suitability, and that many of these, year in and year out, are doing work for which they are not naturally fitted. To the community this represents an incalculable loss in efficient service; to the individuals concerned it means needless discontent, irritation, and strain. Indeed, there can be no doubt that a large proportion of the unhappiness in this world must be attributed to individuals being engaged in occupations unsuited to their temperaments and to their capacities.

During the past twenty years, and particularly since the War, many boys and girls and their parents have availed themselves of the assistance freely provided by the Juvenile Employment Committees which are maintained in all the principal centres of industry by the Ministry of Labour and by the Local Education Authorities. It is, however, only recently that scientific methods of vocational guidance have been

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introduced, with results, as shown in this book, which unquestionably demonstrate its superiority to previous, more or less unsystematic procedure.

Like so many others, I have followed with the greatest interest the tireless efforts made by the Institute during the past nine years to develop a suitable technique for giving vocational guidance. This technique is not yet, and probably can never be, perfect, but a large and annually increasing number of students from the public and secondary schools and from the universities now come to the Institute for such advice, and the results prove to be highly satisfactory when their after careers are followed up. The methods employed for such students are naturally somewhat different in detail from those described in this book, which deals with work among elementary school children. But the fundamental principles are identical, and the day cannot be far distant when in every type of school some such scheme as that adumbrated at pp. 295-298, of careers masters and visiting experts, will be established, to the lasting benefit of the individual and of the community.

Those who make use of the Institute's organization for examination should remember that they are not only benefiting the individual examinee and his connexions; they are also assisting in the development of a new science which can become exact only through further experiment. By taking advantage of the facilities now offered they are helping a new advance of science which will surely result in the increase of the efficiency and of the happiness of mankind.

D'ABERNON

## PREFACE

THE purpose of this book is to estimate the value of vocational psychology in determining the occupations best suited to adolescents. It describes the most extensive investigation hitherto conducted in the field of vocational guidance, a series of studies rendered possible by the benevolence of the Carnegie United Kingdom Trust, made, in a limited geographical area, by members of the Research Staff of the National Institute of Industrial Psychology.

These studies include, in the first place, a description of the present methods of advising boys and girls leaving the elementary schools in a certain district of London as to the choice of their careers. In the second place, they reveal the average attitude of parents and local employers in this district toward young people during the first years of occupational life. Thirdly, they give an account of the more scientific methods of vocational guidance, devised and experimentally applied by the Institute's investigators to one-half of the group of twelve hundred children here under consideration. And, fourthly, they offer some statistical estimate of the value of the Institute's methods of vocational guidance. This estimate is based (under a variety of different classifications) upon the results ascertained by following up, over a maximum period of four years, the after careers both of the six hundred who received and of the six hundred who did not receive the Institute's advice, and by comparing those who followed the advice given them with those who failed to do so. Finally, in the Appendix (pp. 295-330) a working scheme is tentatively submitted for the establishment in the future of a general scheme of vocational guidance on the lines adopted by the Institute in this experiment. Samples of the series of tests applied by the Institute during the investigation are there reproduced.

This book is likely, therefore, to prove of interest both to the cultured layman and to the psychological expert, and it has been planned accordingly. When technical terms are used the

general reader will, it is hoped, find them sufficiently explained in the accompanying footnotes; the detailed account, however, of the tests and of their application (pp. 68-97) is inevitably technical. On the other hand, such a reader will be attracted to the evaluation of interests, temperament, and character (pp. 98-121), to the description of visits paid to the homes (pp. 167-169) and to the employers of the boys and girls (pp. 173-175), and to Chapter X, in which the whole experiment is reviewed in non-technical language. The results of comparison (*a*) between those children (the 'experimental' group) who received and those (the 'control' group) who did not receive the Institute's advice, and (*b*) between those who followed and those who neglected the advice given, are contained in Chapters VIII and IX. But whereas the former chapter presents the results in a summarized form for the educated layman, the latter is more suited to the vocational psychologist, being largely composed of the same data more fully elaborated and considered in greater detail than is acceptable to the general public.

It is obviously difficult to determine how far the particular area in which the experiment was carried on may be regarded as typical of London or of any large city. This area is largely industrial, and the workpeople, most of whom live fairly near their places of employment, are engaged in an unusually large variety of occupations. The principal occupations are general engineering, printing, road and rail transport, the distributive trades, watch- and clock-making, scientific instrument making, furniture manufacture, nickel- and electro-plating, building, and employment in hotels, boarding-houses, and similar establishments. Large factories and workshops are relatively few in the area; indeed, it is estimated that more than 60 per cent. of all the firms here employ less than fifty workpeople, and that approximately 25 per cent. of them employ less than ten workpeople each. The large proportion of 'one-man' firms no doubt accounts for certain features of the industrial life of the young people in the neighbourhood which are revealed by the investigation—*e.g.*, the attitude of the employers. Again, overcrowding is not an uncommon feature: the district is somewhat poorer than the average, and several of the better schools in it happened to be excluded from the scope of the experiment. It is not surprising, therefore, that the average intelligence of

the young people examined falls rather below the general standard for London elementary school children.

During the period covered by the investigation the demand for juvenile labour was somewhat in excess of the supply. Accordingly, an adolescent could frequently choose which post he or she would accept; and very often the determining factor was the wage offered, which would supplement the family income, rather than the suitability of the work or the prospect which the job afforded of employment continuing into adult life.

The reasons for choosing elementary schools for this research are given at pp. 35-36. The mass of school-children in this country have to decide on their first occupation just prior to leaving school shortly after attaining their fourteenth birthday. Their experiences during the first few years of their occupational life may determine their permanent attitude toward work subsequently. It is important, therefore, that even at this early age they receive the best possible vocational advice, however imperfect it be and however desirable be reconsideration at a later stage. If and when effect is given to the Hadow Report of the Consultative Committee of the Board of Education, some kind of guidance may be necessary even at the age of eleven years; for then elementary education will cease, and a decision will become necessary as to what kind of post-primary education will best suit the general intelligence and the special abilities of each child. Through the generosity of the Carnegie Dunfermline Trust a further experiment by the National Institute of Industrial Psychology is in progress at this moment in Fife, where a group of children is being vocationally examined, each child on several occasions, from the age of eleven upward; this may be expected to throw light on the problems and limitations of early educational and vocational differentiation and guidance.

Despite many unexpected difficulties, the experiment here under review does demonstrate the ability to predict vocational success in elementary school children. It is true that comparatively few of the children who received the Institute's advice consciously acted on it; indeed, no pressure was brought to bear that they should do so, and in only 55 per cent. of them did the advice given by the Institute's investigators correspond

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with the wishes, if any, expressed by the children. It is true, too, that, the follow-up being limited to the early years of their occupational career, the ultimate and permanent value of the advice given to the children cannot yet be ascertained. Nevertheless, the results of the present experiment demonstrate a consistent and favourable relation between (a) the occupations adopted that correspond to the advice given and (b) the length of tenure of posts held and the employers' estimates of the services rendered by the children.

Thus, those lads and girls who throughout the follow-up period kept their first post in conformity with the advice given are proportionately more numerous in the 'experimental' group, who had received the Institute's examination and advice, than in the 'control' group, who had received the advice of the school conference without such assistance. And, in the case of such children retaining a single post, the difference in number between those who followed and those who discarded the advice given is greater in the 'experimental' than in the 'control' group (pp. 221-225). Moreover, when the degree of the employers' satisfaction with the young worker is compared with the degree of correspondence (or 'congruity') between the advice given and the work which was actually obtained (pp. 225-226), it is evident that the highest degree of satisfaction is most likely to occur when the post is in close agreement with the advice, and that in this respect the advising of the 'experimental' group is distinctly better than that of the 'control' group.

The conditions, however, are so complex that a difference in *every* part of *every* statistical table in favour of the 'experimental' group is not to be expected. It is therefore hardly surprising that some of the evidence obtained from other criteria is less striking, or, in a few instances, apparently contradictory. The incidence of these disturbing conditions on the children who received the Institute's advice and on those who did not receive it was clearly different. And if to some it may appear that the explanatory reasons advanced by the investigators sometimes take undue account of disturbing factors, they serve at least the useful purpose of indicating the many unforeseen difficulties which beset an experiment of this kind and the necessity of considering every comparison in relation to attendant circumstances

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For, as the experiment proceeded, the 'experimental' and the 'control' groups turned out to be in many respects not truly comparable; and almost always the advantage seemed in favour of the 'control' group. In the first place, there was reason to suspect that, although these two groups were selected purely haphazard, the 'control' group—at all events, of the girls—accidentally contained the larger number of brighter children.<sup>1</sup> In the second place, the vocational advice received by the 'control' group was, in the absence of any very obvious contraindications, influenced largely by the child's wish. Consequently, if at first the young worker did better in an occupation corresponding to the advice given, this might be due to the satisfaction of his wish, not to the suitability of the work or of the advice given. Thus his initial success would not necessarily be continued in later years. The comparison obtained, therefore, was often not the one primarily sought—namely, that of the judgments, made by the advisers of the 'experimental' and of the 'control' groups respectively, of real 'suitability' of occupation. Accordingly, the results afford little evidence of the value of the procedure of school conferences generally. Where the post taken was in accordance with the advice received, but was opposed to the child's wish, as occurred far more often in the 'experimental' than in the 'control' group, the results were adversely weighted in the former as compared with those of the latter group. In the third place, there were many more unclassifiable cases (due to insufficient information) in the 'control' group than in the 'experimental' group. Large numbers of these had unusually frequent changes of work, but they had to be omitted from statistical consideration owing to their unclassifiability, thus once again adversely weighting the comparable data of the 'experimental' group. It was also far more difficult to grade the suitability of the posts chosen in relation to the advice given in the case of the 'control' group, for here the investigators had much less information on which to base their estimate of the children's innate capacities. With these and other complications at work, it is only surprising that the

<sup>1</sup> Thus, only twelve of the girls in the 'experimental' group reached the standard of Ex VII, whereas it was reached by twenty-three of the girls in the 'control' group.

results should have been as definite as they are; and it is certain that in other circumstances they would have been far more so.

The methods of vocational guidance devised for this experiment and described in this book show a definite advance on those used in the earlier study carried out in 1923 jointly by the National Institute of Industrial Psychology and by the Industrial Health (formerly Fatigue) Research Board. The Institute's investigators have not only improved the technique of arriving at a recommendation of a suitable occupation; they have also added to our knowledge of the requirements of different occupations, and they have thrown fresh light on the interpretation of the results of performance tests and of tests of manual dexterity and mechanical ability.<sup>1</sup> The description of the methods used shows also how many considerations, besides the valuable information afforded by appropriate tests, need to be taken into account in the framing of vocational advice. The importance of an adequate medical examination is indicated by the fact that about 15 per cent. of the children examined by the Institute proved to be aiming at occupations for which they were unsuited on medical grounds. And the reliability of the estimates formed by the Institute's investigators of the temperamental qualities of the children is confirmed by the complete agreement of two observers in over 87 per cent. of the same cases examined by them independently.

The reader of this book will feel, as I do, that Mr F. M. Earle and his band of devoted assistants are to be congratulated on their noteworthy achievement, which marks a distinct advance upon any similar work of scientific vocational guidance hitherto undertaken. Naturally, as head of the Institute to which they belong, I was concerned in planning and making the initial arrangements for their work and in considering general principles and methods. But during the early conferences

<sup>1</sup> Cf. the following: *The Use of Performance Tests of Intelligence in Vocational Guidance*, by F. M. Earle, M. Milner, and other members of the staff of the National Institute of Industrial Psychology (Report No. 53 of the Industrial Fatigue Research Board) (H.M. Stationery Office); *The Measurement of Manual Dexterities*, by F. M. Earle, F. M. Gaw, and other members of the staff of the Institute (National Institute of Industrial Psychology); *Tests of Mechanical Ability*, by F. M. Earle, A. Macrae, and other members of the Institute's staff (National Institute of Industrial Psychology).



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of the investigators, and in the subsequent stages of the actual research, it became abundantly clear to me that I could safely leave the conduct of the experiment in Mr Earle's hands. Until the time came, therefore, for discussing, arranging, and writing up the results, and in passing the book through the press (when I received valuable help at the Institute from Mr C. Scarborough and Miss M. K. Horsey), I did little myself beyond visiting an occasional school conference or school 'party,' or seeing some investigator at work on the examination of the school-children. Thus the real responsibility for the success of this investigation has fallen on Mr Earle's shoulders; and I wish to make this clear. The results attained by him and his collaborators show not only that the application of psychological methods to the problems of vocational guidance is of definite value, but also that the more extended use of these methods is now a matter of practical politics for the benefit of the young people of this and future generations.<sup>1</sup>

That the methods of vocational guidance which have been here employed are, with suitable modification, also applicable to those attending secondary and public schools is clearly indicated in the results of a follow-up, recently published,<sup>2</sup> of cases after they had been examined and advised at the Institute.

C. S. MYERS

<sup>1</sup> I should like here to thank the Secretary and Trustees of the Carnegie United Kingdom Trust, the members of our Advisory Committee, certain high officials of the Board of Education, the Ministry of Labour, and the London County Council, as well as those teachers and those officials of the Juvenile Employment Exchanges with whom we came into contact, for their generous, ungrudging help.

<sup>2</sup> *The Journal of the National Institute of Industrial Psychology*, 1931, vol. v, pp. 242-247.



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NOTE. *The members of this Committee acted in a personal capacity,  
and were not officially representing their departments, etc.*

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## CHAPTER I INTRODUCTORY

THE interest in vocational psychology which has arisen in this country since the War is reflected in the growth of the National Institute of Industrial Psychology. The Institute was founded in 1921 for the application of psychology and physiology to the special problems of industrial and commercial firms. From the outset it was clear that problems of a vocational character constitute an important part of this work. Even before the foundation of the Institute a demand had arisen in the United States of America and in parts of the continent of Europe for scientific methods by which employees of suitable capacities and experience might be selected. The traditional policy of 'hire and fire' had proved far too wasteful, and, in general, employers were becoming more and more interested in all new methods which gave promise of curtailing outlay while increasing output. In other spheres of inquiry psychologists had already begun to study differences in human abilities by experimental methods, and were busily employed in founding the new science of vocational psychology. In England, fortunately, the need for careful scientific investigation into the vocational applications of psychology by persons of adequate training and experience was realized from the very first, and practical steps were taken to allow such investigation to be made.

In 1922 the National Institute of Industrial Psychology established a special section for vocational work. At first the section aimed at devising tests for selecting workers for particular occupations ('vocational selection'). As the work developed it was realized that such selection should ideally be supplementary to 'vocational guidance'—the study of an individual

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for the purpose of discovering in which branches of work he is most likely to succeed. Certainly, from the point of view of the individual, guidance in the choice of a career is more valuable than improved methods for the selection of employees.

The Institute accordingly decided to offer further aid to young people in solving the problem of choosing a suitable career: a special department was planned, so that the advice offered might be based upon the most reliable estimates of the young person's abilities and attainments that it was possible to make. At this time the Institute owed much to the knowledge and experience of Dr (now Professor) Cyril Burt, who was the first head of the Vocational Department, and who established the methods then adopted.

Vocational bureaux on these lines were, however, no new thing. In Barcelona, in Brussels, and in other places on the Continent attempts had been made for some years to guide children in the choice of a career by means of special measurements, some physical and physiological, others mental and psychological. In America experiments in vocational guidance by means of psychological tests were also in process of development, those of Toops<sup>1</sup> and Woolley<sup>2</sup> being especially noteworthy. The Institute, therefore, at first followed a lead given by others, but very soon it found opportunities and needs for working along lines of its own.

In Great Britain the provision of organized assistance for adolescents seeking employment began in 1910. Under the provisions of the Labour Exchanges Act, 1909, the Board of Trade set up Labour Exchanges, afterward called Employment Exchanges, to afford, *inter alia*, information to workpeople seeking employment and employers requiring workpeople. From the beginning it was recognized that special arrangements should be made for dealing with juveniles; a number of the exchanges had Juvenile Departments, and Juvenile Advisory Committees were appointed, in accordance with Clause 2 of the Act, to advise on the working of these departments and to assist the boys and girls in choosing an occupation.

<sup>1</sup> H. A. Toops, *Tests for Vocational Guidance of Children Thirteen to Sixteen* (New York, Teachers College, Columbia University, 1923).

<sup>2</sup> H. T. Woolley, *An Experimental Study of Children* (New York, the Macmillan Company, 1926).

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Further, provision was made under the Education (Choice of Employment) Act of 1910 which enabled local education authorities to give boys and girls "assistance with respect to the choice of suitable employment by means of the collection and communication of information and the furnishing of advice," and a number of authorities took up powers for this purpose and appointed Juvenile Employment (or Welfare) Sub-committees. These powers were confirmed under the Education Act of 1921 (Section 107), and since the passing of the Unemployment Insurance Act, 1923, those education authorities who "exercise powers" are required to undertake, under the Ministry of Labour, the local administration of Unemployment Insurance in respect of boys and girls under eighteen years of age.

The provision of assistance to juveniles in regard to their future employment is now under the central authority of the Ministry of Labour, whether it is carried on locally by the Ministry itself or by the local education authority. This assistance is available to boys and girls in all the principal industrial centres of the country. The Local Juvenile Advisory Committees appointed by the Minister of Labour are composed of representatives of the local education authority, teachers (elementary and secondary), employers and workpeople from the principal local industries, and other persons interested in questions related to juvenile employment. In London the work is carried on at the Juvenile Employment Exchanges of the Ministry, attached to each of which is a Juvenile Advisory Committee working in close co-operation with the local schools of the London County Council; their activities are co-ordinated by the London Advisory Council for Juvenile Employment, on which the London County Council is represented.

The procedure adopted by these committees, which is based on the scheme of co-operation agreed upon between the Ministry of Labour and the London County Council, is briefly as follows:

(1) During the last term of the child's school career the head teachers supply on a special form (see p. 37) confidential reports upon each child's scholastic attainments, character, and medical record, together with suggestions as to the kind of work for which the child is best fitted.

(2) This information, supplemented by particulars of the

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home circumstances of the child, is considered at a school conference, to which the parent and the child are invited. The conference is composed of the head teachers, heads of evening schools, members of the school Care Committee, and the Juvenile Advisory Committee, the latter as industrial experts. After consultation with the parent and child the conference recommends a suitable occupation or group of occupations and gives advice in regard to such important kindred subjects as attendance at evening school, social club facilities, etc.

(3) If the child desires help in finding a suitable post he or she is invited to the Juvenile Employment Exchange at the end of the school term, with a view to being placed in a situation.

(4) The Juvenile Advisory Committee endeavours to keep in touch with the boy or girl during the early years of employment by means of a system of 'industrial supervision.' The secretary of the Juvenile Advisory Committee arranges for the employer to be visited, as far as possible within three months of the date of placing, in order to ascertain the suitability of the young person for the work in which he or she has been placed and the suitability of the work for the boy or girl; the young people are invited to 'evening rotas' (sometimes called 'open evenings'), at which they meet members of the committee, and are encouraged to report the progress made, or the difficulties experienced, which may call for adjustment; and in addition, with the help of the London County Council School Care Committees, visits are paid to the homes of those young people for whom this method of supervision is thought desirable.

Subject to such modifications as may be found necessary or desirable to meet local conditions, the above procedure is generally applied in other parts of the country.

The possibility of utilizing psychological tests in various educational problems has received considerable attention in recent years. During 1923 the Consultative Committee of the Board of Education heard evidence upon the use of psychological tests of 'educable capacity.'<sup>1</sup> Group tests of intelligence were then being used by progressive teachers, just as the Binet tests had been tried during the preceding decade. But as yet

<sup>1</sup> Their report, issued in 1924, gives an excellent account of the historical development of psychological tests, and recommends further investigation, especially into tests of vocational aptitude.

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there was no widespread realization of the help which the psychologist could give in problems of this kind; and it was clear that greater interest could be aroused only by a practical demonstration of what might be achieved when suitable psychological methods were applied by properly trained persons.

It was mainly with this object that the Industrial Fatigue (now Health) Research Board, which had already published a review of the relevant literature, came to co-operate with the National Institute of Industrial Psychology in an experimental inquiry into the possibility of giving better vocational advice with the aid of fuller information derived partly from psychological tests. This experiment was carried out in three London elementary schools in 1923, when 100 children were examined by the trained investigators of the Institute and the Board under Dr Cyril Burt's direction. The conclusions they formed as to each child's vocational fitness were communicated to the parents and the child, and two years later inquiries were made into the child's industrial history. The report of this experiment was published early in 1926, together with an analysis of the results obtained from this single 'follow-up.'<sup>1</sup> It is sufficient here to say that these results were highly encouraging.

At the conclusion of the examination of this group of children some of the fundamental problems awaiting solution could be more clearly envisaged. It was obvious that, although this first experiment might yield useful results, they could not be conclusive, the number of cases being relatively small. Moreover, the factors influencing the success of any child, such as the prevailing conditions of employment, were not necessarily randomly distributed. It seemed desirable to obtain employment data of two kinds: (a) from children who had been specially examined and advised by the Institute, and (b) from a 'control' group of children who had left school in the ordinary way after attending the school conference. Alternatively, if this principle of a control group were not employed, the number of children examined and advised would have to be large enough to eliminate the possible effects of an unequal distribution of opportunities for finding employment. The most effective

<sup>1</sup> *A Study in Vocational Guidance*, Report No. 33 of the Industrial Fatigue Research Board (H.M. Stationery Office, 1926). Further reference to the results obtained in this study will be found in later chapters.

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method, however, and the one decided on, seemed to be to secure two groups of children (one a 'control' group) approximately equivalent as regards vocational opportunity. By comparison of the two groups the value of the assistance offered to each of them might then be more definitely assessed. Further, an inquiry into the different qualities and abilities required for the various occupations available needed to be carried out in much greater detail to ensure that a comprehensive psychological examination might yield its maximum benefits.

Thus the project of a more extensive experiment was conceived. The Carnegie United Kingdom Trust, which had already assisted the Institute in establishing itself as a national institution, responded generously to an appeal to endow this new proposal. By means of a special grant from this body the Institute was enabled in the autumn of 1924 to begin its experiment, although the practical work of examining and advising children did not start until March 1925. Much preliminary work had to be done, and the co-operation of the various public bodies concerned had to be enlisted.

The London County Council not only granted facilities for the examination of the children in the schools, but generously provided a special report by one of its medical officers (Dr J. Nairn Dobbie) upon each of the children the Institute examined. As will be seen from the details given later, this was help of an invaluable kind. The Ministry of Labour likewise placed at the Institute's disposal the service of its Employment Exchanges, and much valuable work has since been carried out through them. Major E. J. M. Harvey, O.B.E., at that time secretary of the London Advisory Council for Juvenile Employment, and Miss Gaite, secretary of the Finsbury and Holborn Juvenile Advisory Committee, in particular gave cordial support and assistance. An Advisory Committee was also appointed by the Institute for consultative purposes during the progress of the investigation.<sup>1</sup>

Without the active co-operation of each of these bodies and individuals the experiment would have been very much curtailed in its scope and value. The Institute is not less indebted to the heads of the schools and to the Care Committees of these schools for the considerable help they gave during

<sup>1</sup> A list of its members is given at pp. 21-22.

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nearly two years of active examination of children, as well as in the difficult work of follow-up.

In December 1924 the general scheme of investigation was submitted to the Advisory Committee, and subsequent developments have been from time to time considered by the same committee. Two reports of progress were prepared and published during the course of the investigation,<sup>1</sup> and those portions of their contents which are of permanent interest have been included in this book.

<sup>1</sup> In August 1925 and December 1926.

## CHAPTER II

### THE GENERAL AIMS OF THE EXPERIMENT

VOCATIONAL guidance has been defined as "the giving of information, assistance, and advice in choosing a career, preparing for it, entering it, and progressing in it."<sup>1</sup> In this definition four main aspects of vocational guidance are indicated, and the following questions upon them arise.

(1) *Choosing one Career from several Alternatives.* Upon what grounds and at what stage should this choice be made? Should it, in the case of the elementary school child, for example, be made just before the child is about to leave school or earlier?

(2) *Preparing for the Career chosen.* What sort of preparation is most desirable? Should it be general and independent of the choice of a career (the choice to be postponed until the conclusion of this preliminary education), or should it be closely related to the career already chosen and definitely aimed at? In other words, when should direct vocational training begin? And where should it be obtained?

(3) *Entering the Career selected.* What openings are available and how are they obtained? What means exist, or should exist, for assisting the child to find employment of the kind desired?

(4) *Progressing in the Career.* What abilities and knowledge must be developed, and how will training of specific kinds assist in this development? Where should this training be given—in the place of employment or in special schools?

But these chief aspects of vocational guidance do not all require detailed examination in connexion with the present investigation. It is enough to remark that the preparation to be given in the schools (elementary, modern, or secondary) *before* the child is allowed to enter occupational life, and the training to be given, either in special schools or in the workshops, *after* he has entered the selected occupation, are matters of importance rather to the educationist, to the parent, and to the employer than to the psychologist. The problems of vocational

<sup>1</sup> Cf. the American Vocational Guidance Council's annual reports.



## GENERAL AIMS OF THE EXPERIMENT

training, which are aspects of the wider problems of vocational guidance, important though they are, do not enter directly into the present inquiry. Similarly, the provision of suitable means of helping young people, by advice and otherwise, to find congenial employment is the concern of a large group of persons voluntarily or professionally engaged in 'placement' work; but the psychologist is only indirectly interested in them.

We shall not, therefore, be concerned in this report primarily with the purely administrative aspects of vocational guidance, which are really the province of the teacher, the employment officer, and the authorities who supervise the activities of these officials. At some later stage it may be necessary to consider the relation of the psychological methods which are here described to the practical needs of the country and to existing organizations.<sup>1</sup> But the first problem, and the one to which our attention has been devoted, is how to choose a career and upon what basis to make the choice. If, when the child is at a reasonably early age, we can decide what type of occupation is likely to suit it best, it seems probable that many difficult problems of education, training, and placing will be the more easily solved. The Consultative Committee of the Board of Education has recommended the introduction of differentiated courses of instruction for children of different interests, abilities, and aims.<sup>2</sup> The success of these courses will naturally depend very greatly upon their suitability for the groups of pupils who are to receive them. And since they will ultimately have an important bearing upon vocational success, it follows that for the individual the right choice of a career is a problem to be considered in the early stages of these courses. It would involve a great waste of effort if the individual's needs were consistently ignored.

It is, therefore, important to consider when and in what circumstances the choice of a career can best be made. There is no unanimity of opinion on this point. Some advocate the adolescent's entry into industrial life without definite plans, one or two years to be spent by him in settling down before a final choice of career is made. Others consider such procedure

<sup>1</sup> A preliminary discussion of the problem of organizing vocational guidance on an extensive scale is given in the appendix (pp. 295-298).

<sup>2</sup> *The Education of the Adolescent* (H.M. Stationery Office, 1926).

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unduly wasteful and uncertain in its results, and point to the disillusionment which accompanies a plunge into industrial life without adequate training or wise guidance. They would prefer that the choice should be made before school life ends, if it is possible for such a choice to be made without serious risk of error, and for that reason (among others) they support recent efforts to raise the statutory school-leaving age.

The present investigation provides information showing that this risk of error can be materially reduced.

In order to choose a career wisely it is necessary to know: (a) what we are capable of achieving by virtue of our aptitudes, our power to learn, and the experience we have already gained; (b) what the career to be chosen requires in the way of ability, knowledge, energy, character, and the like. It is useful, of course, to have additional information concerning the monetary rewards offered by the career, the competition to be encountered for vacant posts, the frequency with which openings are likely to occur, etc. But such information should not be made, as it so often is, the sole basis of choice. What is of paramount importance is the recognition that under present conditions attempts to enter occupations for which the applicants are unfitted are made every day. The degree of unfitness obviously varies considerably. Sometimes it is slight, and the aspirant achieves a fair measure of success,<sup>1</sup> although, had he been wisely guided, he might have achieved greater success in some other sphere. Sometimes the unfitness is considerable, and the only remedy is a prompt change of employment.

✓ To discover a person's capacity two procedures are open to us. We may study his *past achievements* in detail, and deduce therefrom his probable success in the occupation under consideration. This is the usual method of the teacher in reporting upon a child's abilities, of the person making an appointment who studies the written statements of the applicants, and of every one who passes an opinion upon the capacities of his fellow-men. But there are great variations in the

<sup>1</sup> By success is meant here satisfactory achievement. It may be admitted that standards of proficiency vary greatly, but it is almost certain that our average standards are lower than they need be, just because there are in almost every occupation some who would be better occupied in another pursuit. Success in terms of money or position cannot be considered alone.

## GENERAL AIMS OF THE EXPERIMENT

efficiency of such studies, in the detail in which they are carried on, and in the accuracy of the conclusions reached.

An alternative method is to subject the applicant to a *special examination*, in order to discover from his success in such a test or trial whether he possesses the knowledge or the abilities desired. Up to the time of writing such tests have been mainly tests of attainment in particular branches of knowledge or in special forms of skill. Thus the applicant for recognition as a qualified medical practitioner must show that he possesses the requisite professional knowledge; the applicant for a post as typist must display a sufficiently high degree of manipulative skill. Scant use has been made of tests of aptitude,<sup>1</sup> chiefly because such tests are difficult to devise and to use, and also, perhaps, because there has not yet developed any general belief in their efficacy. But the success which has followed their use within recent years suggests that there is scope for their extensive application. This experiment offers evidence in confirmation of this belief.

Unlike the vocational opinions expressed by the friends of the parent or by the child's comrades, those of a psychologist are open to scientific scrutiny and criticism, because the bases upon which they are formulated are quantitatively and qualitatively expressed. Every person's opinion of a child's vocational fitness may, of course, be put to the test of experience—that is, we may observe how the child's success in life compares with forecasts previously made. This is the method employed in the present experiment; but whereas a casual opinion rests on data that are never explicitly formulated and stated, the trained observer's opinion is, or should be, recorded as being derived from certain carefully ascertained facts. The comparison of these facts and the judgments based upon them with the subsequent success of the person under consideration must obviously be of great value. Thus, if the psychologist's examination yields measures of a child's aptitude from which it may be concluded that the qualities needed, say, in engineering appear to be present, while those needed in clerical work do not, there is objective evidence for selecting engineering as a career rather than clerical work. But before we can trust such a forecast we must show (a) that the

<sup>1</sup> We may distinguish *aptitude* from *attainment* by saying that, while the former is innate, the latter is the result of innate equipment plus experience.

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measurement of the child's vocational aptitudes so obtained is a *reliable* one; and (b) that the analysis of the requirements of any occupation to be recommended is thoroughly satisfactory, in the sense that the qualities essential for success have been *truly* identified.

It is not easy to demonstrate conclusively the exactness of either of these processes, but it is part of the purpose of this report to indicate the degree to which the procedures adopted may be trusted. In establishing the reliability of any psychological test the resources of the experimental psychologist may be extensively utilized. And in analysing the requirements of occupations the contributions of the psychologist are extremely useful, although here there is much new ground to be broken. Each of these two aspects will receive separate attention in due course. Meanwhile the main purposes of the present experiment may be stated as follows :

- (1) To investigate the value of psychological methods of evaluating abilities as applied to the problem of choosing a career.
- (2) To investigate the general and special abilities (including traits of character) required in different occupations.
- (3) To observe how children vary in their general and special abilities and, by studying each child's progress in the occupation chosen, to determine the extent to which these variations are vocationally significant.
- (4) To consider generally how the procedure for giving advice upon choice of employment may be improved.

## CHAPTER III

### THE GENERAL SCHEME OF THE EXPERIMENT

#### 1. The Choice of Schools and of School-children for Study

IT is clear from the previous chapter that there are several stages at which an experiment in vocational guidance may be attempted. We may, for example, seek to determine the vocational aptitudes of boys and girls at the age of ten or eleven, at thirteen or fourteen, at sixteen or seventeen, or even later. At each of these ages there is a special problem to be considered, and no one procedure is appropriate to all cases. The secondary school boy of seventeen is able to choose from a range of occupations different from that which lies before the elementary school boy of fourteen, and the assistance of the vocational adviser may therefore be sought in different ways and for different reasons. In course of time, it is to be hoped, information will be accumulated concerning the most appropriate methods of dealing with the problems of young people at different ages and of different kinds of experience.

In the present experiment it seemed advisable to concentrate upon one particular problem, and there were excellent reasons for limiting the investigation to the elementary school child of from thirteen to fourteen years of age. In this country the elementary schools are more extensively organized for vocational guidance than other schools, care committee work, placement, and after-care having been carried on for some years; often their contacts with industrial life are more numerous and direct than those of the secondary schools; and the need for guidance may often be greater among children who have to find employment at fourteen than among those who are able to remain at school for several years longer. Moreover, the previous experiment<sup>1</sup> in which the Institute had taken part had shown how the investigation of this particular problem might be considerably improved. On the other hand, we must admit that it is much more difficult for a child of fourteen to obtain the work for

<sup>1</sup> Cf. *A Study in Vocational Guidance*.

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which he is best fitted, and it is harder to give reliable vocational guidance.

The experiment was carried out in certain of the elementary schools served by the Finsbury and Holborn Juvenile Employment Exchange of the Ministry of Labour. The area served by this exchange was chosen for the following reasons:

(1) The occupations available in the district were at that time sufficiently numerous and varied to provide for many combinations of abilities.

(2) The children were able to find work mainly in their own district.

(3) The number of placings through the Employment Exchange was comparatively high.

(4) The 'labour turnover' did not appear to be excessive.

(5) The schools were within easy reach of the Institute.

The system of co-operation existing between the schools and the Juvenile Employment Exchange has already been described (see pp. 24-26). On the opposite page is given a specimen of the school-leaving form, which provides for reports from the head of the school or department and from the Care Committee, and on which the recommendations of the school conference are entered.

In carrying out its experiment the Institute aimed principally at placing before these school conferences valuable *additional* information concerning each child's vocational fitness, derived from a careful study of all the facts of the child's abilities and the occupations available in the district. The details have yet to be described, but as for the conduct of the school conferences being in any way affected by the Institute's experiment, it may be stated at once that no change of any kind occurred. The parents and children were invited and the conferences were held in the usual way. The only new factors were (*a*) the additional personal contacts with the parent, brought about by visits to the home paid by the Institute's investigators, and (*b*) the information supplied by the Institute concerning the children examined.

### 2. The Formation and Nature of the Tested and Control Groups

As already mentioned (p. 27), one of the special features which it was considered advisable to introduce into the investigation

EDUCATION OFFICER'S 'DEPARTMENT'

## SCHOOL LEAVING FORM.

NAME OF SCHOOL

Cheltenham was very fine. The 12th.

Date of 10th Birthday

1. Name, \_\_\_\_\_  
2. Address ("city"), \_\_\_\_\_  
3. Time spent in "area" studied, \_\_\_\_\_  
4. Class, \_\_\_\_\_  
5. Student or Advisor(s) (e.g. St. IV., V., VI., VII., etc.), \_\_\_\_\_
- a. General observations as to conduct, character and ability, including any special aptitudes.  
b. Special observations as to character and ability, including any special aptitudes.

Send Money or Memento.

Principal of D.C.S.

Wid of Pen Test

Percent of total to "other" is 66

## Care Committee's Report.

1. Home circumstances and father's occupation. (This information should be obtained before the Conference by means of a personal visit to the home where necessary.)

2. Parents' wishes as to employment \_\_\_\_\_
3. Supervision—(a) Necessary, (b) Unnecessary.
4. Club or other organisation, if any, attended by the child \_\_\_\_\_

## Information elicited at Conference.

- L. Is child staying on at School?...

## Recommendation of Conference.

**C0978**—This part of the form should be filled in at the Congresses and not afterwards!

1. General indication as to Nature of work.
2. To be placed by Exchange, other Agency, Parent or Head Teacher
3. Name of Contribution School desired.
4. Name of Evening Institute desired
5. Name and address of Supervisor.
6. Name of Exchange to which this form (or copy) is sent.

(D-1)

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was a control group, consisting of children who differed from the tested group only in that they did not receive the Institute's examination and advice. The two groups were formed in the following way.

The names of the children due to leave a particular school at a given time were arranged in alphabetical order, and the odd numbers were then placed in one group, the even numbers in another. One of these groups was then chosen for special examination, the other group being left to pass through the school conferences in the ordinary way. The number of children leaving each of the selected schools varied from six to twenty per term, so that the number of children to be examined on each occasion varied from three to ten. The number of schools in which examinations were carried out also varied slightly from term to term, since the length of the term partly determined the number of children who could be examined and advised in time for the school conferences, some of which were held a considerable time before the end of term. These variations are shown in the following table.

	Number of Children in the Experimental Group	Number of Children in the Control Group
Summer term 1925 . . .	100	97
Winter term 1925 . . .	173	168
Spring term 1926 . . .	105	111
Summer term 1926 . . .	141	152
Winter term 1926 . . .	81	72
	<hr/>	<hr/>
Total	600	600

These five batches, although composed of children from different schools, were sufficiently large to enable separate studies to be made of each, and advantage was taken of this condition to modify the technique of the examination as the experiment proceeded. But in the majority of particulars these batches were very much alike. Almost all the children were between the ages of 13 years 9 months and 14 years at the time of examination; they had received instruction under very similar conditions; and they lived in much the same environment. What variations there were in home circumstances, in opportunity, and in outlook and ambitions were so slight as to require little notice.



## GENERAL SCHEME OF THE EXPERIMENT

The same conditions apply to the composition of the control batches. The differences in number between the control and the experimental batches arise from the fact that the number of school-leavers in each term in each school was often an odd number, so that, supposing the larger number was made the control group and one or two of the children selected for examination subsequently fell ill, the exact equality of the numbers in each batch was upset.

The schools in which the experiment took place were somewhat below the average for the whole of London, and by chance excluded a few of the best schools in the neighbourhood. There were no superior schools, but, on the other hand, there was none extremely poor. The general prosperity of the homes ranged from moderately good to moderately poor, the majority being slightly below the average.

### 3. Method of Examination

The children who were to be advised by the Institute were interviewed and examined individually by one or more members of the Institute's staff specially trained for this work. These interviews and examinations were carried out at the school during the child's last term. The information derived from them was supplemented by special reports from the teachers dealing with the child's school record and general progress, by a report from the school medical officer, and by information obtained through visits to the child's home. All these separate phases of the inquiry are described in detail in subsequent sections of this report.

The various tests were not given all at one time, but were spread over several days, and, except in the later stages of the experiment, when the method of examination was changed, were usually given by more than one person. The methods adopted during the successive phases of the experiment were as follows:

*First Method (273 cases).* Each investigator was given the responsibility of applying one or two of the tests to all the children in the group. Thus one investigator would give the individual intelligence test (Stanford-Binet), another would apply the manual dexterity tests, and so on. By this method the tests themselves were each given with a minimum of

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variation,<sup>1</sup> and there was the added advantage that reports on each child's abilities and temperament were available from a sufficient number of persons to enable a useful estimate of the reliability of their combined observations to be made. This method has much to commend it, but it is costly in time when schools have to be repeatedly visited for purposes of examination (time-table difficulties constantly occurred), and when round-table discussions of the results have also to be arranged. These discussions tended to become very prolonged.

*Second Method (105 cases).* Two investigators were given the responsibility of deciding upon the interpretation of the test results, after they had, between them, carried out the major part of the examination of each child.

*Third Method (222 cases).* One investigator was asked to carry out the complete examination of each child and to interpret the results himself. In cases of special difficulty the supervising investigator visited the schools and also interviewed the children, so that his personal impressions could likewise be used in interpreting the test results.

The third method proved to be by far the most effective as regards organization and saving of time when the groups in each school were small and many schools had to be visited. It was also the most interesting for the investigator. The disadvantage that only one opinion about the child, apart from those of the teachers and parents, was available did not ultimately prove so serious as at first it was thought to be. In any case, the practical work of vocational guidance in the future will undoubtedly have to be carried out by persons working independently; for which reason, apart from other considerations, it seemed desirable to experiment with this method. It should be mentioned, however, that the investigators who took part in the experiment had co-operated for so long that probably their procedure and methods of interpretation had become as definitely standardized as they could be; consequently the results obtained by one investigator working alone would be likely to differ little from those obtained from the same child

<sup>1</sup> The 'personal equation' of the examiner can, of course, never be wholly excluded, even in the most rigidly standardized tests.

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by another investigator.<sup>1</sup> This was not to be expected in the early stages of the experiment; hence the early procedure with frequent round-table talks undoubtedly had its value.

### 4. Information needed in giving Vocational Advice to School-children

The interviews and examinations conducted by the Institute's investigators were directed toward securing information of the following kinds:

- (1) The nature of the child's home and family circumstances; the special opportunities for finding employment; and the hobbies, ambitions, general character, and abilities of the child, as described by the parents.
- (2) The state of the child's physique and general health, as reported by the school medical officer or as attested from other sources, any physical condition likely to prejudice success in a particular kind of employment being recorded.
- (3) The teachers' reports on the child's scholastic attainments, progress, character, temperament, and suitability for any special work.
- (4) The child's general ability, as measured by tests of intelligence.
- (5) The child's abilities in dealing with problems of a practical or of a mechanical kind, as measured by suitable tests.
- (6) The child's manual dexterity or 'neat-fingeredness,' as measured by suitable tests.
- (7) The child's qualities of temperament and character, especially those which might be vocationally significant, as determined by the investigation.

The manner in which information was collected, whether by personal inquiry or by specially devised tests, will be fully described in the next chapter. Most of it was entered in the special record-book<sup>2</sup> prepared for each child, and, after having been conveniently summarized, was used ultimately as the basis for giving advice upon the occupation to be chosen.

<sup>1</sup> Cf. the results of the estimation of emotional traits given at p. 114.

<sup>2</sup> For the record-book used in this experiment see Appendix, pp. 324-330.

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### 5. Formulating Advice on the Basis of the Information obtained

To give practical advice based on information of this kind requires a clear understanding of the relation between the picture of the child's abilities thus formed and the various possibilities that exist of putting these abilities to effective use. At the start of the experiment the investigators were obliged to make tentative analyses of the special abilities needed for success in various occupations—e.g., in office work, cabinet-making, printing, etc. This entailed a special study of the occupations open to a child who leaves school at fourteen—a study, of course, not confined to that particular age, and involving consideration of the opportunities for advancement which the occupations subsequently provide. Considerable help was derived from the previous analysis of the occupations commonly entered by elementary school children on leaving school.<sup>1</sup> But at the time when this analysis was carried out few detailed studies of these problems had been made. A discussion of the further development of these occupational studies on systematic lines has since been published by the Institute in a report entitled *Occupation Analysis*.<sup>2</sup>

It was clearly necessary also to arrange the studies of each individual child in systematic form. The schedule which had been employed in the earlier experiment (*cf.* p. 27) provided obviously the most suitable starting-point, and in the initial stages of the present inquiry the task of formulating vocational advice proved to be greatly facilitated by its use. This schedule<sup>3</sup> (slightly abridged) was as follows:

- I. Home conditions.
- II. Physical conditions.
- III. Mental conditions.
  - (a) Intellectual capacity, as expressed by:
    - (i) Tests of general intelligence;
    - (ii) Tests of special abilities;
    - (iii) Record of attainments and progress in school;
    - (iv) Special interests, amusements, hobbies, etc.

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<sup>1</sup> *A Study in Vocational Guidance*, pp. 4-7.

<sup>2</sup> An abridgment of this report will be found at pp. 134 ff.

<sup>3</sup> *Cf. A Study in Vocational Guidance*, p. 11.

## GENERAL SCHEME OF THE EXPERIMENT

- (b) Temperament and character, as expressed in:
  - (i) Emotional qualities (cheerfulness, assertiveness, etc.);
  - (ii) Moral qualities (industry, reliability, etc.);
  - (iii) Social qualities (co-operativeness, etc.).

The desired information under these heads having been collected together and suitably co-ordinated, the next step was to formulate advice. The principles upon which this was done can be more easily followed when the tests have been described. Their explanation may, therefore, be conveniently postponed (see pp. 121 ff).

### 6. Conveying the Vocational Recommendations to the Parents and Children

Typed copies of the Institute's recommendations were prepared for the use of the members of the school conferences, the procedure of which has already been described (p. 25).

It was essential, in view of the aims of the experiment, that the experimental group of children should not receive any special help in finding employment which might weight the results in their favour. Hence the Institute's recommendations were presented at the school conferences to serve only as additional information which could be utilized if the parents felt so inclined, no special pressure being exerted either by members of the school conference or by the staff of the Institute to get the recommendations adopted. But, of course, it was known to the parents (through home visits and through examinations of the child) that special interest was being taken in their particular child, and some of them were therefore inclined to give favourable consideration to the advice offered. Subsequent events showed, however, that to accept the recommendations and to carry them into effect are very different things.

In most cases two, and in some cases three, different occupations were recommended, and when necessary one of the Institute's staff gave reasons for the order of preference. In a few instances a brief explanation was given to the members of the school conference before the interview with the parent and child began.

After the school conferences a brief statement of the sort of employment which the child was recommended by the Institute

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to try to obtain was sent to every parent in the form given below.<sup>1</sup> They were also advised to apply to the juvenile employment exchange for any further information they might require, and for assistance in obtaining employment.

DEAR MR ———,

You will remember that a few weeks ago we called to have a chat with you about               's future work. The headmaster and teachers at the school have helped us to inquire very carefully into               's abilities and prospects of success, and, considering the opinions expressed, we think that               is specially fitted for

Should this be impossible the next best thing to do would be

We think that               's best chances lie in one of these directions, and we should like to see               happily placed in such work. If by any chance               has already gone into work which is quite different, and if it turns out that               does not like it, or if               is only taken on for a short time, we hope you will remember this letter and give               a chance to make good in the work we have suggested.

We hope to hear later that               is getting on well. It may be helpful if you show this letter to               's employer.

With all good wishes for               's success, we are,

Yours faithfully,

<sup>1</sup> In the later stages of the experiment an abbreviated form of the letter was used.

## CHAPTER IV

### THE VOCATIONAL STUDY OF THE CHILD

#### I. HOME CONDITIONS

##### A. THE HOME VISIT

NO complete study of the child can be made if he is thought of merely as an isolated unit, in terms which are dependent solely on records of behaviour and performance during a few hours' examination. The child's characteristic behaviour is not the invariable expression of some fixed quality, but a response to a particular situation, an attempt on his part to adjust himself to the special conditions of his environment. Hence his behaviour cannot be understood unless some of the dominant problems of his life also are understood.

Among the problems in the life of a fourteen-year-old most important perhaps are the personalities of his parents and the opportunities and restrictions of the home environment, together with the nature of his relations with his brothers and sisters. Further, the way in which he will meet situations in the future is likely to depend in part upon his innate capacities, in part upon those traditions and modes of response that he has absorbed from his home background. For these reasons it was considered necessary to include a detailed study of the home as part of the vocational guidance examination.

Study of the home was made by means of information obtained from the teachers and the child, and by a visit to the home itself for the purpose of obtaining an interview with the parents. The information obtained from the child during the interview at the school included his address, the occupations of his father, mother, brothers, and sisters, the number of persons living at home, and the number of rooms in the house.

The objects of the home-study may now be considered in detail.

## METHODS OF CHOOSING A CAREER

### (a) The Investigation of the Child's Past and Present Environment

(i) *From the Point of View of the Social Status of the Home.* The condition of the home as regards cleanliness and neatness, the general nature of the street and neighbourhood, and the adequacy of the housing conditions were observed and recorded by a system of notes and ratings on a specially prepared schedule. The father's occupation was also recorded, and where possible the occupations of the grandparents.

A rating<sup>1</sup> for general prosperity was made, and any other items were added which seemed likely to throw light on the nature of the social code in which the child had grown up, the direction of his ambitions, and the conditions that would help or hinder him in the future. It should be noted that the final judgment was based on a combination of different items of evidence, including both observation of appearances and information obtained through conversation.

The exact weight to be given to each class of items was a matter for subjective judgment. In this connexion an estimate of the reliability of the parents' replies was recorded in terms of a five-point rating scale. This was particularly necessary, owing to the possibility that the parents might misunderstand the nature of the investigation, and conclude that it was in the Institute's power not only to recommend jobs, but also to provide them; in which case they were liable to answer questions more with a view to creating a favourable impression than to helping the investigator to estimate the true nature of the situation. After a little practice, however, it was possible to detect and estimate the influence of this desire and to weigh the value of the evidence accordingly. In all cases appearances and information had to be considered in relation to each other. Thus, to take one example, a family of four were living in two rooms of a house situated in a somewhat ill-famed alley. Conversation with the mother, however, elicited the fact that the family had rigidly set their faces against becoming identified with, or sharing in the rather disreputable life of the neighbourhood, and only because of the housing shortage had they

<sup>1</sup> Booth's scale as given in *Life and Labour of the People in London* (1903), vol. ii, p. 21, was used.



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## VOCATIONAL GUIDANCE RECORD FORM: I

Name : Age :  
School : Class : Date :

### Home and Family Circumstances

HOME: Type of home : Number and size of rooms :  
Condition of home : Prosperity of home :  
Character of neighbourhood :

FAMILY: Father's occupation : Wages and regularity :  
Mother's occupation :  
Family living in house :

Wage-earners : Non-wage earners :

Family conditions :

Health of family :

Family history :

CHILD: General physical and mental condition :

Past history :

Parent's opinion of child :

Submissive	Excitable
Shy	Nervous
Dependable	Tidy
Good-tempered	Cheerful
	Persevering

Hobbies :

Special vocational opportunities :

Vocational plans—Parent's : Child's :

Need for immediate employment : Reliability of replies :

Degree of co-operation given by parent :

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been unable to move to another district. In the meantime they had managed to buy their fourteen-year-old boy a bicycle, in order that he might not be tied to the district in his free time.

(ii) *From the Point of View of Opportunities for Experience available to the Child.* Particular inquiry was made as to the child's position in the family, such as eldest or youngest, and the opportunities that the environment provided for hobbies, games, care of younger children, or learning housework. Notes were made of any special experience, such as contact with the father in business or work undertaken in out-of-school hours, and of any unusual condition in the family, such as peculiarities of health, physique, personality, or attitude in any of its members.<sup>1</sup> Thus among the girls it was important to know whether, for example, the mother was dead or an invalid, or perhaps at work all day, and whether that meant that the fourteen-year-old child had to prepare the midday meal for the younger children, or mind the baby during out-of-school hours, so that there was no time left for hobbies. In the case of a boy it was helpful to know, for example, how to interpret his own report that he never helped in the house, but spent all his leisure playing in the streets. Such behaviour might be directly related to temperamental characteristics, or might be the result of an attitude prevalent among the parents that it was unmanly for a boy to do any housework, even though such a prohibition meant an almost unceasing burden of work for the mother.

### (b) The Collection of Information about the Child

This part of the interview was planned to supplement the child's own story and the teachers' reports, and dealt not with what the child *might* do, in the light of the possibilities of his environment, but with what he actually *did* do, as far as the parent was able to report. Incidentally, it provided a useful subject of conversation, during which a study was made of the parent's personality. Inquiries were made about any outstanding peculiarities in the child's mental and physical development, and particular emphasis was laid on his actual occupations

<sup>1</sup> Ratings for the intelligence of the parents were made on the basis of the coherence of their talk, the width of their interests, the nature of their knowledge of the child, and their plans for his future.

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during out-of-school hours, the part he played in household activities, and his behaviour toward other children.

### (c) The Discussion of Vocational Plans

This involved not only questions about the parent's vocational plans for the child, but also consideration of the need for immediate employment or the possibility of further education.

For the earlier groups the home visit was undertaken near the beginning of the examination, usually after the individual intelligence tests had been given. It was often found, however, that the parents asked the investigator to suggest vocational plans. The procedure was, therefore, readjusted, and the home visit was postponed until after the main part of the child's examination had been completed and a provisional recommendation formed. This procedure seemed to have two advantages. It made possible the discussion of crucial points in the recommendations which might otherwise have been overlooked. It also increased the chances of the parents' accepting the recommendations, since the points in their favour could be brought forward in an informal way; whereas when the parents' first knowledge of the recommendations was obtained in the more formal atmosphere of the school conference there was often a meek assent at the time, but little further attention paid to the advice given.

### B. RESULTS OF THE HOME VISIT

The extent to which it was possible to study the environment varied greatly according to the attitude adopted by the parent. Various factors appeared to have an influence upon this attitude. Thus, in a few of the better class homes there was a certain independence displayed by the mother, a tendency to look upon the investigator's visit as an unwarranted interference: sometimes it was even impossible to get beyond the doorstep or obtain any very detailed information about the home. In some of the very poor homes a different underlying attitude led to a somewhat similar result. Here the parents were often unwilling to allow the living conditions to be seen, although the mother was usually glad enough to talk interminably on the doorstep. A third factor apparently influencing the reception was the parents' attitude to the school.

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Since it was found by experience that attempts to explain the nature of the experiment were liable to produce certain misconceptions, the investigator introduced herself as coming from the school. Usually such an introduction caused an initial defensive suspicion to blossom into a cordial welcome. Naturally, however, it sometimes happened that the parents had come into conflict with the school, possibly over questions such as leaving before the end of the term in which the fourteenth birthday occurred. Only when a cordial reception was received was it possible to obtain those details of family history which throw an important light on the general traditions of the home. There can be no doubt, though, that for the most part parents gave all the information in their power.

The extent, however, to which it was possible to obtain information about the children depended not only upon the welcome received, but also upon the parents' intelligence and capacity for observation. As has been stated, ratings for their intelligence were made in addition to those for the reliability of the information received. In a few instances, particularly where the family was large, the mother seemed to know surprisingly little about her children.<sup>1</sup>

At the beginning of the experiment the discussion of vocational plans was limited to the consideration of financial possibilities, openings available, and the parents' ambition for the child. It was felt by the investigators that the parents in general were most anxious to receive some concrete suggestion. Hence when the procedure was changed, and the provisional recommendations became available for discussion at the time of the home visit, the contact with the parent was established much more easily.

It was not always easy to win the parents over to the Institute's advice. For example, certain mothers who had been in domestic service proved to be particularly influenced by their own unfortunate experience. Sometimes, if they themselves had been unhappy in the work, they could not be persuaded to accept suggestions of this sort, even though it was explained that conditions were rapidly improving, and that the prospects offered were in many ways better than those of factory work.

<sup>1</sup> See description of interview with parent, pp. 167-169.

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Actually no serious effort was made to convince them against their will, as it was realized that, for the average fourteen-year-old girl in the district studied, the living-in system of domestic service, and the change of environment involved, might make demands on her powers of adaptation too great for her to meet without her parents' whole-hearted co-operation. It was necessary only to glance down the street while home-visiting on a warm evening to realize what this change might mean in the loss of a certain vivid type of social life; for, in spite of its poverty, each household, sociably encamped upon its doorstep, presented a cheerful picture.

### C. INTERPRETATION OF THE RESULTS

The results of the home visits were recorded in descriptive terms, with the exception of estimates of such factors as parents' intelligence, and the general prosperity, neatness, and cleanliness of the home. The material thus obtained was used as an aid in the understanding of the child's temperamental qualities and in the evaluation of his expressed vocational interests and ambitions. It served also as a basis for predicting the nature of the social group to which he was most likely to adapt himself. For example, it was necessary to consider how far it would be wise for a girl from an extremely poor and feckless home to take up clerical work or West End dress-making, however well suited she might seem to be as regards actual ability for these occupations; for if she were at all emotionally unstable the strain caused by the effort to adapt herself to unfamiliar social demands might at least result in a lessened efficiency, even if it did not lead to more serious consequences.

Purely economic conditions, as distinct from questions of cultural level, were given less weight, since in nearly every case there was an immediate need of money. It was found that willingness to be apprenticed, or to start at a low wage in order to learn a trade, depended less on economic conditions in the home than on the wisdom and foresight of the parents and intellectual level of the child. Parents' wishes, if in conflict with the recommendation provisionally put forward by the investigator, were taken into account only if they involved such motives as objection to the child's leaving home. Where

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their wishes were opposed to the Institute's main suggestion several alternative recommendations were given in case the parents might later change their minds. Any special conditions in the family were also considered, chiefly in connexion with the possibility of the child's leaving home. Thus in the occasional cases where the moral character of the parents seemed not entirely desirable, or where there was antagonism between parent and child, or, more commonly, between stepmother and child, work necessitating living in was recommended.

### 2. PHYSICAL CONDITIONS

#### A. THE NEED FOR MEDICAL EXAMINATION IN VOCATIONAL GUIDANCE

The importance of the medical aspect of vocational guidance is obvious. In bodily, as in mental, characteristics human beings exhibit well-marked differences, and not less marked are the differences in the demands made by the various forms of industrial work on the physiological resources of the worker. Indeed, it is probably true to say that the 'manual' occupations, such as are entered or ultimately followed by the vast majority of elementary school children, vary more in respect of their physiological than of their psychological requirements. Moreover, the consequences of physical maladjustment at work may be in some ways even more serious than those of mental maladjustment. The bank clerk who finds his work temperamentally uncongenial may, by the exercise of self-control, make himself, if not happy, at least efficient in it. The salesman who lacks the proper mental equipment for his occupation may escape dismissal owing to the stupidity or leniency of his employer, and may muddle through his work cheerfully blind to his inefficiency. Quite different is the case of the furniture-remover, whose maladjustment is a matter not of intelligence nor of temperament, but of cardiac muscle. He too may persist in his work—and in Great Britain occupations are not easily changed when the adolescent period is over—but if he does, disaster certainly awaits him; and even if he should succeed in effecting a change of work it may be only after permanent damage has been done.

In the sphere of physical, as in that of mental, capacities common speech recognizes general and special factors. We talk

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of 'general health' as we talk of 'great muscular power' and 'a poor digestion.' But whereas special mental capacities are thought to be relatively independent of general intelligence, in the physical sphere the general and special factors are intimately connected. There are, it is true, certain physical conditions—such as, for example, excellencies or deficiencies of the special senses—which may be regarded as independent of general physical fitness: a boy may be healthy and strong and yet be flat-footed, myopic, and colour-blind. Such a boy the doctor might describe as "fit for work requiring a high degree of general physical efficiency, but not requiring good sight or perception of colour, and not involving the standing posture," just as the psychologist might describe a boy as "fit for work requiring a high degree of general intelligence, but not requiring mechanical aptitude or literary facility."

For the most part, however, particular physical conditions are intimately bound up with the general bodily health and vigour; they contribute to the general condition and help to make it what it is, and they must be considered not merely in themselves, but also in relation to the general bodily economy. It would be absurd, for example, to describe a boy as "fit for work requiring a high degree of general physical efficiency, but not requiring a very effective respiratory apparatus," for a healthy respiratory system is a *sine qua non* of general fitness. If general physical efficiency has any meaning at all it must mean the condition which results from the co-ordinated activity of the separate, well-developed, and healthily functioning bodily organs and systems—muscular, circulatory, respiratory, and the rest. The mechanisms involved are so varied and complex that the problem of establishing a norm of general fitness, and devising methods of accurately assessing deviations from the norm, is a very difficult problem indeed. Some of the attempts which have been made to solve it are referred to later.

By 'health' is sometimes meant mere freedom from disease. In this sense a person may be described as healthy, as a vegetable is described as healthy, and yet be under-developed and permanently incapable of performing strenuous physical work. On the other hand, 'physique' and 'stamina' have been defined,<sup>1</sup> respectively, as "the attainment of such bodily

<sup>1</sup> By A. A. Mumford, in *The Lancet*, 1915, vol. i, p. 115.

## METHODS OF CHOOSING A CAREER

structure and organization as enables a person to put forth mechanical energy through the muscular system," and "the capacity for sustained vital activity, particularly when endurance has to be sustained against disintegrating influences, whether of strenuous work or of disease." In assessing the physical efficiency of adolescent school-children the doctor must pay special attention to physique and stamina, for the child entering industry is an organism that must not only live, but must also work. Particular conditions of ill-health must, of course, also be considered, both as tending to impair physique and stamina and as tending to be ameliorated or aggravated by particular kinds of work and environment. It is clear, too, that, in considering the child's health from the point of view of vocational guidance, the doctor must not merely note the symptoms of existing illness, but must also observe the signs of constitutional predispositions to particular diseases, and must advise against such occupations as favour the development of any ailments to which the child may be naturally prone. The slogan of modern medicine is 'prevention,' and the school doctor, in giving vocational advice of a medical nature, has a notable opportunity of performing most valuable preventive work. Finally, the doctor, although his contribution will usually be negative, should when possible give positive advice. In the physical, as in the mental, sphere the aim should be not merely to save the child from work in which he is likely to fail, but to direct him to work in which he is likely to find the fullest scope for all his capacities.

Although much study has been given to the injurious effects of the 'dangerous trades,' and to methods of protecting the workers in these trades, the general problem of assessing the physical requirements of different kinds of industrial work has as yet received little attention. In Great Britain the school medical officer does not usually attend the discussion of the child's vocational plans. He measures height and weight, he notes defects of vision and hearing, and if he finds gross organic lesions he may recommend 'light work only'; in the absence of defects requiring remedial treatment he not uncommonly limits his remarks to the somewhat unilluminating description 'normal.' It is as if the psychologist in reporting on the child's intellectual condition were to use only two



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categories, 'normal' and 'mentally defective.'<sup>1</sup> The school doctor is, of course, concerned only with insuring that the physically unfit child receives treatment. Vocational guidance, as here understood, is not yet part of his sphere of inquiry.

In many industrial centres on the Continent steps have been taken within the last few years to secure a more effective collaboration of the school doctors with the officials responsible for the placement of juvenile workers, and in some cities doctors have been attached to the vocational guidance bureaux. In Brussels, for example, every young person seeking advice at the Inter-Communal Vocational Guidance Office is required to undergo an exhaustive physical examination, which includes an investigation of his early developmental history and hereditary antecedents. The results of this examination are given in the form of definite vocational indications and contra-indications, such as:

(1) Fit for work involving much fatigue regularly borne, without prolonged rest, for which quickness is not an indispensable condition.

(2) Must avoid trades involving the handling of lead, white lead, or mercury.

(3) Must avoid occupations which require the worker to be on ladders, scaffolding, etc.<sup>2</sup>

The value of such information to the lay persons responsible for directing the child to suitable employment is sufficiently obvious, and it is clear that if these methods were generally adopted by school doctors the effectiveness of vocational guidance organization would be materially increased.

### B. THE PROCEDURE FOLLOWED IN THE EXPERIMENT

In this investigation it seemed desirable to obtain more comprehensive and exact information regarding physical capacities and disabilities than is usually included in the ordinary school

<sup>1</sup> A notable example of research undertaken by the school doctor is the work of Dr A. A. Mumford, medical officer to the Manchester Grammar School. He has published the results of numerous interesting investigations of physical conditions (in the adolescent boy) in *Healthy Growth* (Oxford University Press, 1927).

<sup>2</sup> Quoted from Dr A. Stocker, "The Medical Aspect of Vocational Guidance," in *The International Labour Review*, December 1927. This article contains a complete survey, to date, of European vocational guidance organizations employing medical assistance, and includes specimens of medical record forms.

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medical records. Accordingly the London County Council kindly arranged (as we have already seen) that a member of its school medical staff should conduct a special physical examination of the tested group of children. The Institute was fortunate in obtaining for this purpose the services of Dr J. Nairn Dobbie, who brought to the work an intimate knowledge of the London child, a keen interest in the aims and methods of the experiment, and an extreme readiness to co-operate with the Institute's investigators in every possible way. Dr Dobbie visited the various schools throughout the course of each term, and subjected each of the tested children to a very careful medical examination, directed to the discovery of such physical conditions as are of special significance from the vocational point of view. The results of this examination were recorded on a special form, which was prepared by the Principal of the Institute with Dr Dobbie's assistance, and which is reproduced opposite. Copies of this form, when completed, were distributed among the appropriate investigators, who, in the light of such knowledge as they possessed of occupational conditions and requirements, translated the general indications supplied by the doctor into specific vocational recommendations. Occasionally difficulties of interpretation arose, and in the latter part of the experiment it was arranged that the investigators should have an opportunity of discussing their cases with Dr Dobbie after the medical examination had taken place. These personal consultations were found to be of very great value.

The record form explains itself, and detailed comment on it is unnecessary. The most novel features are the provisions for the recording of vocational indications and contra-indications and for the assessment, on a three-point scale, of nutrition, muscular development, and vascular tone. Under the heading 'General type' the doctor wrote a brief summary of his impression of the child, and here he did not confine himself to strictly medical considerations, but included also his opinion of the child's intellectual and temperamental condition. Thus: "Good physique, healthy and strong, low average mentality, steady"; "Neglected little drudge, not robust, backward and lifeless, lacks concentration and application"; "Inconsequent, happy-go-lucky, non-worrying type, probably lazy and easily led, open, averagely intelligent and healthy"; "Strong, healthy,

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## VOCATIONAL GUIDANCE RECORD FORM: II

Name: Age:  
School: Class: Date:

### Physical and Medical Condition

Personal hygiene:

Height

Weight

Vision

Past illnesses:

Present conditions:

General appearance

Nutrition 1. 2. 3.

Muscular development 1. 2. 3.

Glands

Skin

Malformations

Hernia

Throat and nose

Colour vision

Hearing (whisper)

Digestive system

Teeth

Muscular and nervous system:

Tremor

Dynamometer

Walk

Romberg

Respiratory system:

Lungs:

Circulatory system:

Pulse rate

Heart:

Vascular tone 1. 2. 3.

General type:

Indications negating occupations that involve:

Standing

Climbing

Exposure

Nervous strain

Sitting

Dusty atmosphere

Dry hands

Muscular strain

Good sight

Good hearing

Cold

Indoor work

Speech

Damp

Heat

Colour perception

Positive occupational indications:

Special notes (if any):

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very dull and backward, inactive—like a potato.” These vivid pen-pictures were of very considerable assistance to the investigators: not only was the medical information which they contained useful, but also the additional light shed on temperamental tendencies was most helpful. As the doctor’s temperamental assessments were not recorded in any systematic way, it is not possible to correlate them statistically with the investigators’ judgments; but, in general, they served to confirm the investigators’ opinions, and occasionally, as may easily be understood, the conditions of the medical examination brought to light nervous tendencies which were not conspicuous during the performance of the psychological tests.

Some months after the beginning of the experiment it was felt that a more precise grading of the children in respect of ‘general physical fitness’ was desirable. Consequently a four-point rating scale for general fitness was introduced, the doctor indicating the child’s grade—good, good average, poor average, or poor—by writing one of the letters A, B, C, and D in the top right-hand corner of the form. This assessment represented the doctor’s general estimate built up during the clinical examination, and was not based on exact calculations derived from physical measurements.

Two further additions were made to the medical examination during the progress of the experiment—a breath-holding test and a test of balancing on one leg (the thigh of the other leg being raised to a horizontal position with the knee flexed). In the breath-holding test the doctor recorded the time in seconds during which the breath was retained and the child’s reason for giving up—thus, “Couldn’t get no more breath”; “Felt my lungs were bursting.” In the balancing test he noted whether the child remained steady (with or without difficulty) for fifteen seconds, first on the right foot and then on the left.

In giving vocational advice the investigators made every effort to incorporate the doctor’s recommendations. In some cases, in which lack of intimate knowledge of occupational conditions was a source of difficulty, the recommendations of the investigators were expressed provisionally in general terms, specific examples being withheld until the matter could be discussed with the juvenile employment officer at the school conference. The less robust children were frequently found

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suitable for clerical work or for the lighter manual occupations. Work which is both outdoor and light is not easily discovered, but in at least one tuberculous case an ideal situation was found for the child in the service of a relative in the country. Often the work most suitable on medical grounds was quite unsuitable on psychological grounds, and a compromise was necessary. But, despite sundry difficulties, the investigators were left with no doubt whatever as to the great value of Dr Dobbie's expert assistance.

### C. ANALYSIS OF THE MEDICAL DATA

#### (a) Nature of Physical Defects

Of the 523 children medically examined 269 were boys and 254 girls. In 332 cases (176 boys and 156 girls) no definite contra-indications were noted. This does not mean that these 332 children were physically perfect; many of them, though healthy, were of only average or rather less than average physique and robustness. The following tables show, first, the classification of the cases according to the number of contra-indications noted, and, secondly, the classification of the several contra-indications according to the number of cases in which each was recorded. Although the contra-indication 'indoor work' was marked in only one case, there were several other cases in which 'light outdoor employment' was recommended (under the heading "Positive occupational indications") as the best choice.

TABLE I

Number of Contra-indications	Boys		Girls	
	No.	Per cent.	No.	Per cent.
0	176	65.4	156	61.4
1	43	16.0	39	15.3
2	20	7.4	22	8.7
3	16	6.0	19	7.5
4	9	3.3	12	4.7
5	2	.7	3	1.2
6	1	.4	2	.8
7	1	.4	1	.4
8	1	.4	0	0
Totals	269	100	254	100

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TABLE II

Contra-indications	Boys		Girls	
	No.	Per cent.	No.	Per cent.
Muscular strain .	45	16.7	40	15.7
Nervous strain .	23	8.5	45	17.7
Exposure . . .	31	11.5	33	13.0
Standing . . .	18	6.7	19	7.5
Climbing . . .	13	4.8	9	3.5
Dusty atmosphere	13	4.8	6	2.4
Dry hands . . .	16	6.0	21	8.3
Damp . . . . .	10	3.7	15	5.9
Good sight . . .	15	5.6	16	6.3
Good hearing . .	6	2.2	6	2.4
Cold . . . . .	2	.7	5	2.0
Heat . . . . .	2	.7	4	1.6
Speech . . . . .	1	.4	3	1.2
Colour vision . .	2	.7	0	0
Indoor work . . .	1	.4	0	0

A study of the children's vocational ambitions in the light of the results of the medical examination shows that approximately 15 per cent. of those who had a definite post in view were aiming at work which was unsuitable on medical grounds.

The number of children who were graded in respect of general physical fitness is 410 (215 boys and 195 girls), and the following table shows the distribution of the cases among the four grades:

TABLE III

Grade	Boys		Girls	
	No.	Per cent.	No.	Per cent.
A	9	4	13	7
B	47	22	46	24
C	129	60	108	55
D	30	14	28	14
Totals	215	100	195	100

The four-point scale was found difficult to use, owing to the absence of a category for the 'average' case, and it is scarcely

# VOCATIONAL STUDY OF THE CHILD

surprising that the distribution shown above is far from 'normal.'<sup>1</sup> A comparison of the grade letters assigned to the children with the doctor's remarks under the heading "General type" reveals the fact that two distinct categories are included in the C grade. This group contains, on the one hand, children of average health and physique and, on the other hand, children who were definitely below the average (described as 'not robust,' or even 'rather frail'), but who, apparently, were not considered sufficiently lacking in health and stamina to be included in the lowest category, D.

A reclassification of all the children, whether graded by Dr Dobbie or not, has been made on the basis of the combined ratings for nutrition, muscular development, and vascular tone—as shown in the following table. Here 122, for example, indicates a combination of the first grade for *any one* of the three rated conditions with the second grade for the other two conditions.

TABLE IV

Grade	Combinations of Ratings		
A	111		
B	112		(113)
C	222	(123)	
D	233	223	(133)
E	333		

The combinations shown in brackets occurred with extreme rarity; among the boys there were no cases of 113 or 133, and only one case of 123. In a number of cases no rating was given for one or other of the three conditions, and such cases have been excluded from the new classification. The following table and Diagrams 1 and 2 show that the distribution, for both boys and

<sup>1</sup> When, in a large group of individuals of the same age and sex, measurements are taken of an anthropometrical or psychometrical variable such as height, weight, or intelligence, it is usually found that the distribution of the variable is in accordance with the laws of chance. That is to say, the measurements tend to be distributed symmetrically about the average, the frequencies of occurrence of the different degrees of the variable showing a progressive diminution from the average toward the extreme in either direction. Such a distribution is described as 'normal.' Its graphic representation takes the form of a bilaterally symmetrical curve, resembling a bell in shape, and known as the 'normal frequency curve.'

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girls, approximates to the normal. Moreover, the new grading agrees in the main very well indeed with the doctor's general descriptive remarks. It has therefore been assumed to be reasonably accurate, and has been employed for the purpose of correlating physical fitness with other conditions.

TABLE V

Grade	Boys		Girls	
	No.	Per cent.	No.	Per cent.
A	8	3	8	3
B	49	20	60	27
C	97	40	88	39
D	75	31	51	23
E	14	6	19	8
Totals	243	100	226	100

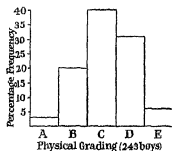


DIAGRAM 1

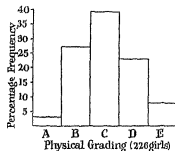


DIAGRAM 2

### (b) Relation of Physical Condition to Intelligence and Temperament

Investigators who have studied the connexion between physical capacities and intellectual abilities and attainments have arrived at somewhat conflicting results, though it is generally agreed that any positive correlation which may exist is low. The present data yield no significant correlation, positive or negative, between general physical fitness and general intelligence (as measured by a group intelligence test of the verbal



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sort), the coefficient of correlation for 195 boys being  $\cdot07 \pm \cdot048$ , and for 179 girls  $\cdot02 \pm \cdot050$ .<sup>1</sup>

Temperament is known to be influenced directly by certain physical factors, especially glandular conditions, and it is also recognized that 'organ inferiority' may indirectly (through psychological rather than physical mechanisms) affect character-development. For the purpose of inquiring how far, in the present group of children, health and strength of body were accompanied by force and stability of 'personality,' five of the characteristics which were rated on the temperamental schedule<sup>2</sup>—assertiveness, ambition, confidence, calmness under pressure, and persistence—have been selected, and the numerical values 5, 4, 3, 2, and 1 have been assigned to temperamental grades *a*, *b*, *c*, *d*, and *e*. In this way 'scores' have been obtained for these combined qualities. It was found that the distribution of the temperamental scores approximated to the normal. The correlation between the temperamental and the physical ratings is not high, but is positive and significant, the figure for the boys being  $\cdot17 \pm \cdot042$ , and for the girls  $\cdot23 \pm \cdot043$ . Thus we have a measure of the tendency of the healthier child to be the more forceful and stable in temperament.

### (c) The Breath-holding Test as a Measure of Physical and Temperamental Qualities

As a measure of cardio-respiratory efficiency the persistence test<sup>3</sup> employed in the examination of air pilots has been much used. In this test the subject is required to take a full breath

<sup>1</sup> The coefficient of correlation is a mathematical device for indicating the extent to which two measurable things vary together. If there is no connexion between the two the coefficient of correlation is zero. If the correspondence is perfect the coefficient becomes unity, 1.00. If the two vary inversely and the correspondence is perfect but negative, the coefficient is  $-1.00$ . In biological measurements the correspondence is never perfect, the coefficient having some value between plus and minus unity.

The figures appended to the values of the coefficients are the 'probable errors' of the coefficients. The probable error is an index of the reliability of the coefficient. Statisticians do not accept a correlation coefficient as reliable, or 'significant,' unless it is at least three times as large as the probable error.

Applied to measurements or to estimates of biological characteristics, the method of correlation shows to what extent one characteristic tends to vary with another.

<sup>2</sup> See p. 110.

<sup>3</sup> See Martin Black, "Respiratory Efficiency in Relation to Health and Disease," *The Lancet*, 1921, vol. ii.

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and, holding his nose, to blow down a bent tube containing a double column of mercury. The time during which he can maintain a certain pressure on the mercury is measured in seconds. Dr Mumford writes:

It was found that the results obtained by the use of the persistence test among growing boys were so highly variable, and that so many conditions—fatigue, shortage of hours of sleep, worry, catarrhal colds, etc.—exerted a profound, though often only a temporary, effect upon the results, that, pending fuller inquiry, the value of results taken on a single occasion was considerably limited.<sup>1</sup>

The same objection would appear to apply in some measure in the case of the simpler breath-holding test used in the present experiment, and a cursory glance at the figures makes it clear that the correlation of the test scores with the ratings for general physical fitness is slight. It was thought, however, that the test results might correspond more closely with temperamental than with physical conditions; their correlation has therefore been calculated with the composite temperamental scores mentioned above. A positive, but low, correlation was found, the figure for 133 boys being  $\cdot 21 \pm \cdot 056$ , and for 137 girls  $\cdot 21 \pm \cdot 055$ .

In the case of the girls the breath-holding test scores were also correlated with the ratings for the individual qualities of persistence, fearlessness, and calmness under pressure, with the following results.

Breath-holding and persistence:  $r = \cdot 13 \pm \cdot 056$

Breath-holding and fearlessness:  $r = \cdot 01 \pm \cdot 074$

Breath-holding and calmness under pressure:  $r = \cdot 14 \pm \cdot 056$

Owing to the lowness of these correlations the corresponding figures for the boys have not been worked out.

### (d) The Exact Assessment of Physical Fitness

A standardized test of general physical efficiency, the result of which could be expressed as a 'physical quotient,' comparable with the 'intelligence quotient,'<sup>2</sup> would clearly be of great value.

<sup>1</sup> *Healthy Growth*, p. 142.

<sup>2</sup> The 'intelligence quotient,' or 'mental ratio,' indicates the calibre of a child's intelligence. It is the 'mental age' of the individual expressed as a percentage of the actual age. The mental age is estimated by means of a standardized intelligence test, the child's performance being compared with that of the *average* child of the same age. Hence a child ten years old who has a mental age of only five years has an intelligence quotient of 50.

Attempts to discover some such index of physical fitness are by no means new, though it is only very recently that efforts have been made to employ exact methods of physical assessment for the purpose of vocational guidance.

The problem has been approached from various angles. Some investigators have concluded that neuro-muscular efficiency is the truest indication of general fitness. F. R. Rogers, for example, has experimented with a series of tests of muscular strength, and has found that they provide a reliable measure of general athletic ability.<sup>1</sup> The only such test used in the present experiment is the hand-dynamometer, and the scores in this test (right- and left-hand figures combined) have been correlated with the ratings for general fitness. As these ratings were based partly on muscular development a positive correlation was, of course, to be expected. The correlation is not high, the figure for 243 boys being  $.46 \pm .034$ , and for 227 girls  $.44 \pm .037$ .

Other workers have used static, rather than dynamic, measures. Nutrition has been regarded as the fundamental physical assessment, and various formulæ have been used for the measurement of nutrition in terms of the relationship of weight to height. Other investigators have tried to obtain standards of physical fitness in terms of vital capacity or of the relation of vital capacity to certain body measurements.<sup>2</sup> None of these methods can be said to be of proved reliability in the measurement of the general fitness of adolescent boys and girls.

Dr A. A. Mumford and Mr Caradog Jones have investigated the relationship between the specific gravity of the body and success in certain athletic activities, observations of specific gravity having been made on boys immersed in the swimming-bath at Manchester Grammar School.<sup>3</sup> As this method is scarcely suitable for general use they have devised a formula which provides an approximation to the actual specific gravity

as measured in the swimming-bath. The formula is  $\frac{W \times K}{H \times C^2}$ ,

where W is weight in grammes, H height in centimetres, C

<sup>1</sup> F. R. Rogers, *Physical Capacity Tests in the Administration of Physical Education* (Teachers College, Columbia University, 1925).

<sup>2</sup> See G. Dreyer and G. F. Hanson, *The Assessment of Physical Fitness* (Cassell, 1920).

<sup>3</sup> *Healthy Growth*, chapter vii, pp. 125-137.

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chest-girth in centimetres, and  $K$  a constant, which in the case of the average boy was found to be in the neighbourhood of 19.5. If  $K$  is left out, the formula  $\frac{W}{HC^2}$  gives a "crude buoyancy index." Dr Mumford found that the successful gymnasts of the school were of markedly greater buoyancy than the average boy.

The "crude buoyancy indices" of 100 of the boys and 100 of the girls included in the present experiment have been calculated, and the figures have been compared with the ratings for general fitness. The results are disappointing, the correlation for the boys being  $.006 \pm .067$ , and for the girls  $.360 \pm .059$ . As a high index signifies a low buoyancy, the figure for the girls means that there is an *inverse* correlation between buoyancy and general physical fitness.

Commenting on these results in a personal communication to the Institute, Dr Mumford states that he has entirely abandoned the idea of any test of *general* physical fitness, and suggests that buoyancy is to be regarded merely as an indication of capacity for *particular* kinds of work—namely, those which require a high respiratory endowment.

The concept of general physical efficiency is certainly a useful one for rough and rapid gradings, but at present there appears to be no trustworthy standardized test of such efficiency, and perhaps future research might best be directed toward investigating the demands of different kinds of work on such *particular* bodily capacities as are amenable to exact measurement.

Other studies might be made, but we are here concerned not so much with matters of general medical interest as with questions which are of special importance from the point of view of vocational guidance. An interesting analysis, prepared by Dr Dobbie, of the data collected in the examination of the first 237 children will be found in the report of the London County Council School Medical Officer for the year 1925. Dr Dobbie discusses many points which have not been dealt with here.

Various important questions suggest themselves to which the present data furnish no answers. How far is it possible to achieve reliable physical assessments at a period of life which is associated with physical, as with mental, development? How far does variation in rate of physical development tend to falsify

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these assessments: can we predict that the child who is under-developed at fourteen will still be under-developed at twenty? Again, how far may poor home conditions produce a merely temporary subnormality, which will not be apparent in later years when the child has found remunerative work? A special investigation of these matters would clearly be of the greatest value.

Under present conditions a systematic medical follow-up of the children was not possible. There are many cases in which work judged unsuitable on medical grounds had been given up, but there is no reliable information as to how far the changes were due to physical maladjustment. Only occasional scraps of medical information appeared in the follow-up data, as when a child who had been advised to avoid damp and exposure was found to have contracted rheumatic fever.

Whatever the difficulties, there can be no doubt that improved methods of assessing physical capacity for different forms of manual labour would make for a considerable increase in human health and industrial efficiency.<sup>1</sup> Complete reliability of prediction will, of course, never be achieved, for physical efficiency is affected by environmental conditions, and the accidents of injury and disease cannot be foreseen. In America, where there is no national scheme of health insurance, and where the larger industrial firms make themselves responsible for the medical care of their employees, periodical re-examination of the workers is finding increasing favour, and such re-examination

frequently results in the discovery that older employees are suffering from defects and disabilities which were not observed at the time of employment. In such cases it is customary to make an occupational adjustment which will provide continued employment, but at the same time remove the risk of permanent injury.<sup>2</sup>

In Britain the ideal may not be attainable, but that is no good reason for contentment with existing conditions, and there

<sup>1</sup> An investigation of the physical condition of a group of 400 American boys and girls, aged fourteen to sixteen, taken at random, showed that 40 per cent had physical defects which were directly potentiated by some requirement of their work. See *The Health of the Working Child* (New York Department of Labour, 1924). (Quoted by Stocker, "The Medical Aspect of Vocational Guidance," in *The International Labour Review*, November 1927.)  
<sup>2</sup> *Medical Cases of Industrial Workers* (National Industrial Conference Board, New York, 1926), p. 29.

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can be no question that these conditions would be markedly improved by an increased attention to the medical aspect of vocational guidance at the school-leaving age.

### 3. MENTAL CONDITIONS

#### A. THE MEASUREMENT OF GENERAL INTELLIGENCE

Every one may observe for himself how in daily life successful achievement in any activity depends upon an individual's 'educable capacity,'<sup>1</sup> and how this capacity is in part general, affecting his success in every activity he undertakes, and in part specific, relating to the exercise of one particular type of activity. Some persons seem to be markedly successful in everything they undertake—they are said to be 'highly (generally) capable' or 'very intelligent.' Others are described as 'fairly capable' or 'intelligent'; others, again, are classed as 'poor.' Each of these *general* types, even the poorest, may, however, possess a very highly developed ability in a *specialized* department of human activity. It has been customary to explain away an implied incapacity by attributing failure to 'lack of application,' 'lack of industry,' or 'lack of interest,' as though hard work were the sole key to success. But although the importance of temperamental factors is fully recognized,<sup>2</sup> the large differences in the success of human beings cannot be explained solely on these grounds. Nor can differences in achievement be attributed largely to differences of opportunity. Some account must be taken of the extent to which abilities are the outcome of innate endowment, on the one hand, and of training and experience on the other. It is part of our task in investigating the problems of vocational guidance to consider how such differences of ability (whether of innate origin or derived from experience) influence vocational success. We must also devise effective ways of measuring these differences.

Of these abilities that which we call intelligence has the widest application, and at present is the most easily measured. Intelligence is usually understood to refer to *intellectual* rather than to *temperamental* processes; it is regarded as innate; and it

<sup>1</sup> This term is used to express the individual's power to learn to adapt himself to his environment.

<sup>2</sup> The part played by temperament is discussed at pp. 98-121.

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is used to describe a *general* ability rather than a highly developed *specific* aptitude. The principle of its measurement is briefly this. Achievement is the outcome of inborn ability acting upon (besides, no doubt, being acted upon by) the environment in which the individual spends his life. Environments differ greatly, and the opportunities for acquiring knowledge and skill vary from town to country and from mansion to cottage. But the effect of these differences in environment is, it is thought, slight as compared with the universal processes of development in mental power (and in character) which go on from birth in every human being at a rate, and to a degree, commensurate with his inborn capacity for development. Consequently, an 'intelligent' child in a 'restricted' environment will eventually, it is believed, reach a higher intellectual level than a 'dull' child in a much more 'extensive' and favourable environment. Every child from birth to the age of twelve, at least, must pass through certain well-defined processes of development; these are not very much quickened by increased opportunities and by more concentrated attention, except in the case of those of superior educable capacity. For example, in the use of words to express exact meanings children develop at very different rates; and although the range of a child's vocabulary will probably be increased by the influence of a superior type of home, his effective use of it depends entirely upon his own ability. Hence, if the 'accidents' of environment can be eliminated or minimized so that the basic experience common to each human being who lives a normal life becomes the main consideration, then the mental power of any person may be estimated by the extent and depth of the knowledge and skill which he has acquired through this experience.

This principle obviously applies more consistently to children than to adults. By the age of sixteen or eighteen the general intellectual power of the individual, so far as it depends upon the maturing of inborn capacities, is largely complete. Any increase comes from the added experience and knowledge acquired in adult life. These are less capable of analysis and comparison than the experience and knowledge gained in childhood and adolescence. Moreover, habits take a larger place in the organization of our lives as we grow older. It should,

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therefore, be borne in mind that the standardizations and the use of intelligence tests and of other measures of capacity for the vocational guidance of children should be judged on their suitability for this special purpose, and not, as is sometimes done, on quite other grounds.

It seemed desirable to state this principle for the benefit of those to whom the problem of measuring abilities is a novel one, especially since it explains much of what follows. But there is no need to refer in detail to the history of the development of tests of intelligence or the results that have been achieved by their use.<sup>1</sup> It is sufficient to say that, as implied by the psychographic schedule already described (pp. 42-43), the accurate determination of the general ability of the individual is an essential first step toward the exploration of his specific aptitudes. Indeed, the latter task is rendered much more difficult because general ability enters to complicate matters, and much of the technique of their measurement is concerned with the determination of the influence of general intelligence in specialized situations.

In this experiment, then, standardized intelligence tests, suitable for the age and kind of experience of the children to be examined, formed an important part of the scheme of examination. They were of two kinds—group tests and individual tests. The former, of the pencil-and-paper type, are adapted to the examining of a number of children simultaneously; the latter require the observation of each child individually during an interview or examination conducted under carefully prescribed conditions.

### (a) Group Tests

It was considered that a sufficiently reliable estimate of the child's intelligence (in so far as it is expressed in and through his power to understand and to use his native language) could be obtained from a group test. The Institute's Group Test 34<sup>2</sup> was specially devised for the experiment, and was given to all the children examined. The test consisted of nine parts,

<sup>1</sup> The reader will find in the report on *Psychological Tests of Educable Capacity* of the Consultative Committee of the Board of Education (H.M. Stationery Office, 1924) a valuable account of the history and aims of tests of this kind.

<sup>2</sup> For a description of this test see Appendix, pp. 299-308.



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each part containing from ten to twenty questions. Some of the parts included questions presented in pictures instead of in words. The total time required for the test was about forty-five minutes.

Its validity,<sup>1</sup> as determined by the agreement of its results with those obtained from the Binet-Simon Scale of Tests (Stanford Revision) given individually, is expressed by the following table of correlations:

TABLE VI  
CORRELATIONS OF GROUP INTELLIGENCE TEST WITH INDIVIDUAL INTELLIGENCE TEST

Group	24 Boys	35 Boys	38 Boys	29 Girls	38 Girls
Median <sup>2</sup> age . . .	12 <sup>2</sup>			13 <sup>10</sup>	
Correlation . . .	.86	.88	.83	.84	.84
Probable error $\pm$ . .	.036	.025	.034	.036	.032

TABLE VII  
CORRELATION OF GROUP INTELLIGENCE TEST WITH TEACHERS' ESTIMATE OF SUBJECTS' INTELLIGENCE

Group	28 Girls	25 Girls	19 Girls	20 Gns	33 Girls	32 Boys
Median age . . .	12 <sup>0</sup>	13 <sup>0</sup>	13 <sup>2</sup>	13 <sup>6</sup>	13 <sup>11</sup>	13 <sup>0</sup>
Correlation . . .	.68	.53	.52	.46	.84	.71
Probable error $\pm$ . .	.069	.097	.113	.119	.034	.060

The reliability of the test, as determined by the correlation between the results obtained from the first application and those obtained from a re-application after an interval of a few months, is expressed in the following table:

TABLE VIII

Group	73 Boys	30 Boys	74 Boys	42 Girls	88 Girls
Median age . . .	12 <sup>0</sup>	14 <sup>6</sup>	13 <sup>6</sup>	13 <sup>2</sup>	13 <sup>7</sup>
Correlation . . .	.83	.88	.78	.74	.88
Probable error $\pm$ . .	.024	.028	.037	.047	.077

<sup>1</sup> The degree of 'validity' possessed by a test is the degree to which the test measures that which it purports to measure. The degree of a test's 'reliability' is the degree to which it is consistent in measuring that which it measures.

<sup>2</sup> When scores or other measures are arranged in order of size the median is the central (middle) measure of the whole series.

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## (b) Individual Tests (the Binet-Simon Scale of Tests)

Besides receiving the group tests, 181 of the children (the first and last groups to be advised) were given an individual examination by the Stanford revision of the Binet Scale, as adapted for English children by Burt and others. The remainder of the children were given a short interview, during which the Vocabulary Test, the Ball-and-field Test, and the Reversed Numbers Tests, taken from this same scale, were applied.

The results of these tests, apart from their value in helping the investigators to understand each individual, throw some light upon the *general intellectual level* of the children examined. They refer, of course, only to the first and last groups advised, and the 'composite' nature of these groups should be remembered. The following table shows the distribution of the mental ages of these children.

TABLE IX

Group	90th Percen- tile <sup>1</sup>	75th Percen- tile	50th Percen- tile	25th Percen- tile	10th Percen- tile	Mean Mental Age	S.D. <sup>2</sup> (years)	C.V. <sup>3</sup>
First								
50 boys .	14 <sup>3</sup>	13 <sup>6</sup>	12 <sup>0</sup>	11 <sup>10</sup>	9 <sup>11</sup>	12 <sup>8</sup>	1·53	12·24
37 girls .	14 <sup>10</sup>	13 <sup>8</sup>	11 <sup>9</sup>	10 <sup>6</sup>	9 <sup>8</sup>	12 <sup>0</sup>	1·97	16·41
Total (87)	14 <sup>8</sup>	13 <sup>5</sup>	12 <sup>6</sup>	11 <sup>3</sup>	9 <sup>8</sup>	12 <sup>4</sup>	1·75	14·21
Last								
38 boys .	14 <sup>1</sup>	13 <sup>3</sup>	13 <sup>8</sup>	11 <sup>8</sup>	10 <sup>8</sup>	13 <sup>3</sup>	1·51	11·40
38 girls .	14 <sup>1</sup>	12 <sup>10</sup>	11 <sup>7</sup>	10 <sup>6</sup>	9 <sup>5</sup>	12 <sup>3</sup>	1·69	13·34
Total (76)	14 <sup>1</sup>	13 <sup>1</sup>	11 <sup>11</sup>	10 <sup>8</sup>	9 <sup>10</sup>	12 <sup>11</sup>	1·62	12·52

The corresponding table for Group Test 34<sup>4</sup>, when the scores

<sup>1</sup> The method of percentiles is used to indicate the rank of an individual among a large group of individuals tested, this rank being reduced to a percentage. For example, an individual whose percentile rank is 90 has gained a higher score than 90 per cent. of his competitors. The middle member of the group has a percentile rank of 50.

<sup>2</sup> I.e., standard deviation. This is a measure of the variability of a group of individuals in respect of any ability tested. It indicates the extent to which, on the average, the scores deviate from the mean score of the group.

<sup>3</sup> I.e., coefficient of variation =  $100 \frac{\text{S.D.}}{\text{Mean}}$ . Unless the means of two series of scores are approximately equal, the standard deviations, being derived from different means, are not directly comparable. In order to study the relative variability of a group in two different tests it is necessary to have a measure, such as the C.V., which takes account both of the mean and of the variability.

<sup>4</sup> Group Test 34 was not quite ready when the testing began; hence the differences in numbers of children.

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in the test are converted to mental ages according to the norms for the test is as follows:

TABLE X

Group	90th Percen- tile	75th Percen- tile	50th Percen- tile	25th Percen- tile	10th Percen- tile	Mean Mental Age	S.D. (years)	C.V.
First								
35 boys .	15 <sup>11</sup>	14 <sup>11</sup>	13 <sup>8</sup>	12 <sup>4</sup>	10 <sup>8</sup>	13 <sup>4</sup>	2.06	15.21
29 girls .	15 <sup>4</sup>	14 <sup>8</sup>	13 <sup>8</sup>	11 <sup>4</sup>	8 <sup>8</sup>	13 <sup>3</sup>	2.26	17.31
Total (64)	15 <sup>8</sup>	14 <sup>10</sup>	13 <sup>8</sup>	11 <sup>11</sup>	9 <sup>8</sup>	13 <sup>3</sup>	2.11	15.97
Last								
39 boys .	15 <sup>8</sup>	14 <sup>3</sup>	13 <sup>0</sup>	11 <sup>5</sup>	9 <sup>8</sup>	12 <sup>10</sup>	1.93	15.05
42 girls .	15 <sup>9</sup>	14 <sup>4</sup>	12 <sup>1</sup>	10 <sup>0</sup>	8 <sup>8</sup>	12 <sup>4</sup>	2.37	19.68
Total (81)	15 <sup>8</sup>	14 <sup>4</sup>	12 <sup>8</sup>	10 <sup>8</sup>	9 <sup>1</sup>	12 <sup>7</sup>	2.16	17.24

The outstanding feature of these figures is that they are obtained from children of practically the same chronological age: their ages varied from 13 years 9 months to 14 years 1 month. The large proportion of children whose capacity is below what may be expected of an average child of the same age is worthy of special note. The explanation of this lies partly in the fact that by scholarship examinations many of the brightest children had already been promoted to secondary and to central schools at an earlier age. But even if allowance is made for a loss of 20 per cent. of the children through such promotions, this does not fully account for the median mental age of the remainder being one and a half years below the normal. Hence, either the children examined were below the average of the general school population, or else the individual tests do them an injustice. The latter explanation was suggested in the report on the earlier study<sup>1</sup> of these questions, when a similar set of figures was obtained. In that experiment the median mental ratio<sup>2</sup> was 95.5 for both sexes, which is equivalent to a mental age of 13 years for children of the age examined. But it may be added that, so far as any clear distinction can be made, the general prosperity level of the homes from which the children came was there slightly higher than it was in the larger experiment. Hence the comparatively low median scores probably truly represent the facts—namely, that

<sup>1</sup> *A Study in Vocational Guidance*, p. 7.

<sup>2</sup> The ratio, expressed as a percentage, of the mental age to the actual age. Cf. p. 64.

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the general intelligence of the group examined was below the average. The causes of this may be attributed (a) to the social level of the geographical area selected for examination, and (b) to the accidental elimination of several of the best schools in that area. By chance also the eighty-one cases in the last batch came from the poorer schools of those selected, a fact which is reflected in the comparative figures.

It is not proposed to discuss here the detailed significance of the intelligence test results. This is more appropriately dealt with when the conclusions regarding a child's vocational fitness are being examined. One point should, however, be made clear at this stage—namely, that the results of these tests were not considered alone. As has been already explained, the vocational advice offered by the Institute was reached after the careful consideration of many factors, some of them conflicting. It would have been unwise to fix definite limits to any test result, and hence to say that, because a certain minimum score is or is not reached in any test, a certain type of occupation should be chosen or avoided. On such bases vocational guidance would be most unsatisfactory. It is true that there are broad divisions in occupations corresponding to the level of intelligence required in them; and, as has been shown in the report on the previous investigation,<sup>1</sup> there appears to be a close parallel between the distribution of intelligence among the population and the proportions of people engaged in the occupations of corresponding difficulty. But neither the measurement of intelligence nor the analysis of occupations is at present so exact that very fine distinctions can be drawn between different callings, regarded from the point of view of suitability in respect of intelligence, for any particular individual. Moreover, as occupational efficiency depends in part on factors other than intelligence, an individual's performance in an intelligence test is never *in itself* a sufficient criterion of his fitness for any particular vocation.

On the other hand, we may safely regard success in such tests as one essential qualification for occupations in which high intelligence is important. Such occupations include those of lawyer, teacher, author, editor, scientist, and most of those given in Classes I and II of the table on p. 16 of the report

<sup>1</sup> See *A Study in Vocational Guidance*, Table III, p. 13.

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of the earlier experiment, but very few of the remaining occupations listed come under this category. In most of these other occupations, however, intelligence is by no means a negligible factor. The occupations can be classified tentatively according to the degree of intelligence which they demand, and future research will doubtless determine more exactly the minimum degree of intelligence compatible with success in each.

It has been shown that, although the average intelligence of persons grouped according to their occupation may show a gradation from occupation to occupation very much like that given in the table referred to in the last footnote,<sup>1</sup> the intelligence of persons in the same occupation varies widely about the mean. And it may be argued, first, that there are many occupations in which people of differing degrees of intelligence (above a certain minimum) can find satisfaction; and, secondly, that absolute uniformity in this matter, even if desirable, is certainly unattainable. On the other hand, the variations that exist at present are almost certainly due in part to the fact that many people are in work for which they are intellectually unsuited; and there can be little doubt that a wider use of intelligence tests in vocational guidance would bring about a reduction in the extent of these variations and at the same time a reduction in the number of vocational misfits. Despite its limitations, the intelligence test must be considered one of the most important parts of the vocational adviser's technique and practice.

But, as has been stated above, intelligence is *only one factor* in occupational efficiency; and there are some occupations in which it appears to be a relatively unimportant factor. It has been repeatedly shown in skilled handwork that skill and intelligence are not highly correlated. Because of this, attempts have been made to construct other tests for the measurement of various special abilities.

Some of these other tests were employed in this experiment. The need for tests of a more practical type was realized from the outset; and, in view of the nature of the occupations likely to be entered by the young people examined, particular attention was paid to this aspect of the problem.

<sup>1</sup> And also in the American Army investigation, from which the table was partly derived.

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### B. THE MEASUREMENT OF SPECIAL ABILITIES

#### (a) The Use of Performance Tests (of Intelligence)

Performance tests are practical problems which depend for their solution upon the manipulation of material or the performance of some specific act, such as tracing a line along the paths of a maze.

The reasoning which originally led to the construction of these tests by their inventors was briefly this. Since intelligence tests of the Binet type are largely verbal, a child whose intelligence is expressed in practical, rather than in literary or linguistic, pursuits will not do himself full justice in such tests.<sup>1</sup> Hence, to show whether or not a boy's failure in the Binet type of test is really a true indication of his lack of intelligence, tests of a more practical type are needed.

Further, in the case of persons of foreign birth whose knowledge of the language of the country is slight, difficulties in understanding the language used in the ordinary intelligence tests have to be taken into account. It would be a clear advantage here again to employ tests which are independent of language.

But although the aim in using performance tests was to obtain a measure of general intelligence free from the influence of supposed special verbal abilities, the conclusions arrived at since the examination of children ceased suggest that these tests, at least with children of fourteen, are definitely less effective measures of intelligence than are the verbal tests, success in them being affected to a considerable extent by special abilities. An exhaustive study of them has already been made,<sup>2</sup> so that only a short general account is necessary here.

The following tests, selected from the series standardized by Dr Frances Gaw,<sup>3</sup> were used in the majority of cases. But when a child did very badly in verbal tests of intelligence,

<sup>1</sup> Whether, however, there is in reality a special linguistic factor of any magnitude influencing success in verbal intelligence tests is doubtful.

<sup>2</sup> *The Use of Performance Tests of Intelligence in Vocational Guidance*, Report No. 53 of the Industrial Fatigue Research Board (H.M. Stationery Office, 1929).

<sup>3</sup> *Performance Tests of Intelligence*, Report No. 31 of the Industrial Fatigue Research Board (H.M. Stationery Office, 1925).

a larger number of performance tests (forming the complete scale proposed by Gaw) was used.

(i) *Maze Test* (Porteus). This test consists of nine mazes graded progressively for children of mental ages from five to fourteen. The subject is required to trace with a pencil the shortest path through the maze (or from the centre of the maze to the exit).

(ii) *Cube Imitation Test* (Knox). In this test the examiner places four cubes in front of the subject and taps each one with a fifth cube in a prescribed order. The subject has then to imitate this action, tapping the cubes in the order demonstrated. This process is repeated a number of times, the successive series of taps becoming more and more difficult.

(iii) *Substitution Test* (Woodworth and Wells). In this test a sheet of geometrical diagrams—of circles, squares, triangles, etc.—is given to each child. At the head of each sheet there is a key showing numbers corresponding to each of the diagrams. Thus a circle is numbered 1, a triangle 2, and so on. The child is asked to number the diagrams according to the key as quickly as possible. The time required to complete the test is noted.

(iv) *Picture-completion Test II* (Healy). This test consists of a set of eleven pictures from each of which a small square area has been cut. The problem is to choose from among a large number of equal-sized squares arranged systematically in a box the most appropriate piece for each picture.

(v) *Formboard Test* (Dearborn). This formboard has 'inset' pieces of six different shapes. One or more of the insets is removed and the others changed in position. The problem is to replace the insets in the fewest possible moves and in the quickest time.

(vi) *Cube-construction Test*. A block of wood painted red on certain of its surfaces is cut into small cubes. The problem is to assemble the cubes to form the original block (a duplicate is shown) in the quickest possible time and with the fewest possible moves.

(vii) *Picture-completion Test I* (Healy). A picture similar in principle to Picture-completion Test II, but less suitable for fourteen-year-old boys and girls.

(viii) *Formboard Test* (Goddard). A formboard test in which

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blocks of different shapes have to be placed as rapidly as possible into corresponding holes in the formboard.

(ix) *Feature Profile Test* (Knox and Kempf). This test consists of pieces of wood which when correctly put together represent a man's face in profile.

The Manikin Test, the Adaptation Board, and the Diagonal Test, which were used only with smaller groups of pupils, are described in the reports already quoted (see p. 76*n.*).

These tests have been combined into a scale comparable with the Binet Scale of Tests; and mental ages, corresponding to the mental ages given by the latter tests, have been worked out and systematically applied.

In this experiment, however, it was found that, although marked differences existed between the success of the children in the performance tests and in other tests (including the written test of intelligence already mentioned), there were differences nearly as large between the scores of an individual child in the various performance tests themselves. In other words, the fact that a child's mental age was estimated at, say, ten years in one of these performance tests could not be taken as a reliable index of his ability, because in another of these performance tests his mental age might work out at sixteen years.

Differences as extreme as this very seldom occur in *verbal* intelligence tests, which are much more homogeneous and usually much better graded in difficulty than are the component parts of performance tests, and in which an individual's work is less liable to be affected by accidental factors. However, these are technical points which need not be further enlarged upon here.

It is sufficient to say that the Institute's investigators found it unsatisfactory to combine into a sort of composite performance test score or mental age the results obtained from a series of performance tests. In particular they thought the mental age method of interpretation misleading, and preferred in their later work to express each child's score as a rank showing what his position would be in a standard group of 100 children of the same age.

It also proved necessary to consider each of the tests on its merits, because in some of them the influence of *general* intelli-



gence appears to be overweighted by the influence of some *special* ability or *special* experience. There can be little doubt that the abilities required in performing some of these tests may change considerably from one age to another, and may even differ between boys and girls. Consequently, while it is possible for a series of practical tests of this kind to be a highly satisfactory means of assessing intelligence when special abilities have not been developed (as with very young children, and perhaps also with children of limited experience), they must be regarded as imperfect tests of intelligence at an age when special abilities are being, or have been, developed.

The child's work in the verbal intelligence test was considered in conjunction with the results of the performance tests. A child who was good in the latter tests but poor in the former was considered 'practical,' whereas in the reverse case the child was, rightly or wrongly, considered to have a 'linguistic' bent of a certain degree or level.<sup>1</sup> The interpretation of the test results is further discussed at p. 123.

The general results of these performance tests, as summarized by the Institute's investigators, are as follows:

- (1) Previously published norms seem to be unsatisfactory for children at the age of fourteen and of the type of experience now under consideration.
- (2) The use of mental age norms in performance tests leads to difficulties of interpretation, composite mental age norms being unreliable.
- (3) Each of the tests seems to demand one special ability or more which affect success to a considerable degree. Some of these special abilities seem to be concerned with the perception of relations of shape or form.
- (4) The abilities required for success in some of the performance tests are apparently related to proficiency in certain manual occupations.
- (5) Systematic observation of the reactions aroused by the 'situations' created by the tests are valuable for purposes of vocational guidance, because of the light thus thrown upon temperamental qualities in the course of the investigation.

<sup>1</sup> In more recent investigational work by the Institute—e.g., in *Fife*—this procedure has been considerably modified.

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### (b) Tests dealing with the Perception of Relations of Shape or Form

(i) *Group Test consisting of Miscellaneous Components.* Reference has already been made (p. 27) to the earlier joint experiment in which tests both of a verbal and of a non-verbal type were employed. Taking the same view of possible differences between verbal and non-verbal abilities, it was thought necessary to use performance tests of intelligence. These, as already explained, were given individually, but to save time it was deemed advisable to try to obtain a collection of tests which could be given in group form, and which would measure "intelligence expressed in non-verbal terms" just as satisfactorily as the individual performance test scale was supposed to do. The preparation of this set of tests was undertaken by Dr Frances Gaw, and, as eventually used, is divided into three parts, as follows:

Part I. Consists of eight sub-tests, each dealing with some aspect of spatial perception:

- (1) Cancellation—discrimination between triangles and circles.
- (2) Copying designs exposed for ten seconds.
- (3) A group form of the Dearborn Formboard Test.
- (4) Drawing designs in reversed position.
- (5) Drawing designs in inverted position.
- (6) Dearborn Maze Test.
- (7) Counting number of cubes in drawings of blocks of such cubes.
- (8) Porteus Maze Test (the last two mazes of the Porteus series).

Part II. Consists of six rather more complex problems (involving numerical calculations as well as constructive thinking), similar in form to the Dearborn type of maze. A simple plan of some streets is shown, and questions are asked as to which are the shortest paths from place to place, and the times required to traverse given routes in vehicles travelling at given rates.

Part III. Consists of four problems suggested by Mr Earle, introducing a maze of streets which, unlike the Porteus

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and Dearborn mazes of rectangular design, is irregularly shaped. The problems consist in blocking, in the most effective manner, all the entrances and exits to a given area.

The perception of form relations demanded in this test is similar to that required by the Porteus mazes, but the type of mental process is rather more complex.

This performance test was given to 100 children, but the results did not warrant its further use in that form. The distribution of scores in practically all the sub-tests of Part I was not satisfactory, and large differences were disclosed between what appeared to be individual and what appeared to be group forms of the same test. Thus sub-test 7 (Part I), counting cubes, was found to give quite different results from the Cube-construction Test of the performance test series. Examination of some of the sub-tests, especially sub-test 2, in detail disclosed the fact that they were unsuited in difficulty to children of this particular age and experience, and that there was not sufficiently fine gradation to give satisfactory results—in sub-test 6, for example, 80 per cent. of the children failed to score. Nor was the distribution of the total scores for Part I much better, since the marks of the various sub-tests were not equally weighted.

Exactly corresponding defects were discovered in Part II, four of the tests being too complex and difficult, the others too easy.

Each of the four tests of Part III, however, proved to be of suitable difficulty, and the score distributions were fairly satisfactory.

But the whole test clearly needed drastic revision and reconstruction. The measures of relation given by correlation coefficients are hence not of much value, but those given in Table XI will serve to indicate the peculiar features of the test as originally devised.

But accumulating experience in the use of performance tests given individually led to the view that in devising a fresh form of non-verbal test it might be desirable to discriminate more precisely between the speed of perception of relations of shape

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or form, the effective recall of such relations, and the more complex mental processes involved in the problems of Parts II and III.

TABLE XI  
CORRELATION OF SHAPE OR FORM TESTS WITH VARIOUS  
TESTS OF THE PERFORMANCE TEST SCALE

Sub-test	Test correlated	Correlation	
		Boys	Girls
PART I			
(1) Cancellation . .	Substitution	.38 ± .08	-.07 ± .115
Cancellation . .	Formboard (Goddard)	.29 ± .09	.12 ± .11
(2) Copying designs .	Picture-completion	.26 ± .09	.28 ± .11
	Cube Imitation	.04 ± .09	-.29 ± .11
	Formboard (Dearborn)	.20 ± .09	.38 ± .11
(3) Formboard Test in paper form . .	Formboard Test (individual)	.26 ± .09	.19 ± .11
(7) Counting cubes .	Cube-construction	.27 ± .09	.36 ± .11
	Formboard (Dearborn)	.16 ± .09	.44 ± .09
	Picture-completion	.39 ± .08	.12 ± .11
(8) Parts of Maze Test given to group .	Maze Test (individually)	.14 ± .09	.14 ± .11
Total score in Part I .	Performance Test I.Q.	.64 ± .06	.52 ± .01
Total score in Part I .	Binet I.Q.	.47	.46
PART II			
Total score in Part II .	Performance Test I.Q.	.37 ± .10	.37 ± .11
	Part I Total	.62 ± .07	.55 ± .10
	Porteus Maze	.02 ± .11	.21 ± .12
	Binet I.Q.	.72 ± .06	.58 ± .09
PART III			
Total score in Part III	Performance Test I.Q.	.53 ± .09	.35 ± .11
	Part I Total	.72 ± .06	.40 ± .12
	Porteus Maze	.37 ± .11	.24 ± .12

For this purpose a new group test of form relations was prepared by Dr Macrae on lines suggested by Mr Earle, while a fresh set of designs for use as an immediate memory-test was prepared by the latter. Both these tests were carefully graded, and, proving satisfactory in application, have since been extensively used. A description is given below.

(ii) *Group Test of Form Relations (Components Homogeneous).* This test consists of eight sub-tests, each requiring the speedy perception of identity of shape even under complicated conditions. It is a paper-and-pencil test. It contains a number of geometrical figures so drawn that in each one a portion is

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represented as missing. The subject is asked to choose from among a number of alternatives the part which belongs to each incomplete whole. The figures are arranged in sets of five, the sets being graded in difficulty, the most difficult requiring the selection of two parts to complete the whole. Each set of forms is presented separately. Marks are awarded for each correct identification, a time-limit being imposed for each sub-test. Samples of the test and directions for its application will be found in the appendix (pp. 317-319).

A test of immediate visual memory consists of eight geometrical designs, graded in difficulty, which are exposed for ten seconds. The subject is asked to reproduce each design from memory on paper immediately after its exposure. The drawings are marked for accuracy in detail and proportion, according to a fixed schedule (p. 320).

A table of percentile scores follows, which shows in respect of each part of the test the scores obtained by the children examined (see also Diagrams 3 to 6). A detailed study of the relations between these parts is to be found in the Institute's report on performance tests and also in its report on *Tests of Mechanical Ability*, where it is suggested that the ability measured by these tests has a bearing on success in certain manual occupations.

TABLE XII  
FORM RELATIONS AND MEMORY TESTS

	Percentiles					Mean	S.D.	C.V.
	90	75	50	25	10			
FORM RELATIONS								
231 boys .	29	24½	20½	16	13	21.49	6.11	28.43
228 girls .	22	19½	16	12	9½	15.87	5.44	34.95
Total .	25½	22	18½	14	11½	18.69	6.44	34.82
VISUAL MEMORY								
234 boys .	34½	29	23½	18	13	23.76	8.29	34.95
225 girls .	31	27	22	16½	13	21.80	7.43	34.19
Total .	33	28	23	17½	13	22.80	7.95	34.87

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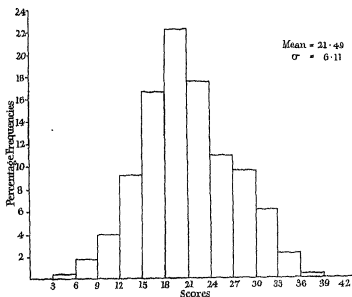


DIAGRAM 3. DISTRIBUTION OF SCORES IN FORM RELATIONS TEST (231 BOYS)

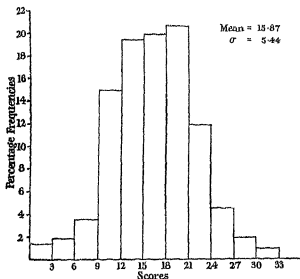


DIAGRAM 4. DISTRIBUTION OF SCORES IN FORM RELATIONS TEST (288 GIRLS)

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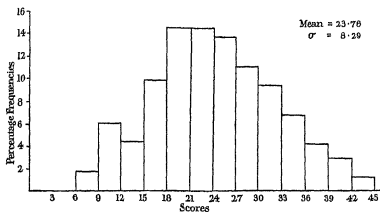


DIAGRAM 5. DISTRIBUTION OF SCORES IN MEMORY OF DESIGNS  
 TEST (234 BOYS)

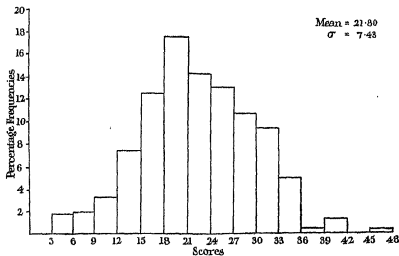


DIAGRAM 6. DISTRIBUTION OF SCORES IN MEMORY OF DESIGNS  
 TEST (225 GIRLS)

*Sex Differences*

The differences between boys and girls are as follows, the boys being the superior group in both tests :

- (a) Form Relations. . .  $d.^1 = 5.62 \pm .363$   
 (b) Visual Memory . . .  $d. = 1.96 \pm .495$

The sex difference in this test is interesting because of its connexion with the mechanical ability test in which similar sex differences are observed.

**(c) Mechanical Ability Tests**

Some persons exhibit high capacity in dealing with complex machinery; others fail to grasp the simplest relations between the parts of a machine. Some again, although they may have succeeded in learning how to operate a machine, never master the intricacies of its construction, and thus are helpless if it goes wrong.

In problems of this sort it is necessary to be able (a) to perceive the *relations* between the parts of the machine which arise from their shape or form (as, for example, in a simple clothes-wringer, where the cogged wheels of the rollers fit together); and (b) to perceive also the *function* of the various parts in relation to the purpose of the mechanism as a whole (as, in the same example, how the power applied in turning the handle of the wringer is communicated to the rollers).

Much of this knowledge can admittedly be acquired by persons of moderate intelligence through experience and instruction. But this does not completely explain the wide differences between the abilities in dealing with mechanical problems which both apprentices and adults display. Clearly something more than experience and instruction—namely, innate mental make-up—is involved.

For this reason it was considered essential to obtain some measure of such innate individual differences as may be revealed in the manipulation of some simple mechanism. In the earlier experiment (*cf.* p. 27) Stenquist's tests of mechanical ability had been used, and the information so obtained had proved valuable. It was therefore decided to employ similar tests in this experiment.

<sup>1</sup> Sex difference between the mean scores.



A full account of the procedure, and of the results obtained from the use of these tests, in this experiment has been given elsewhere.<sup>1</sup> As is there explained, the tests themselves were modifications of the Stenquist assembling tests; they were given to all the boys and to a large number of girls. The testing was individual, and more than half an hour per child was required for giving and scoring the tests. Efforts were therefore made to arrange a short group test which, if given first, might render it unnecessary to apply the longer individual tests to those whose mechanical abilities were poor. Unfortunately, the diagnostic value of the shortened group tests proved to be small. Consequently, in all vocational studies the individual tests had to be depended upon as furnishing the main evidence of mechanical ability. Additional information bearing upon this kind of ability was obtained in most cases from the tests of form relations (pp. 82-83) and from some of the performance tests (p. 77) in which the perception of form relations is an important factor. But the exact connexion between the abilities required for success in these various tests<sup>2</sup> was not fully demonstrated until the later analytic studies of the results of the tests had been completed.

The diagnosis of ability for an engineering trade (or for some particular branch of it) was assisted by the use of certain tests of engineering given to those who had gained high scores in the mechanical ability tests. These engineering tests had been previously devised by Mr M. Tagg for the selection of engineering apprentices; they included several form perception tests, a test in which a pegboard was operated under distraction, and two rather complex assembling tests.<sup>3</sup> It was found that ability in this group of tests had much in common with the ability to perform the modified Stenquist tests, and also with the Cube-construction Test and the form relations tests. Consequently in the later stages of the experiment recommendations for work in which mechanical ability seemed to be required were quite frequently made without giving any additional engineering

<sup>1</sup> *Tests of Mechanical Ability*, Report No. 3 of the National Institute of Industrial Psychology, 1929.

<sup>2</sup> Cf. Report on *Tests of Mechanical Ability*.

<sup>3</sup> A more detailed account of these tests in the earlier forms will be found in the Institute's *Journal*, vol. ii, pp. 132, 133, 316-322.

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tests, although in doubtful cases the longer procedure was always resorted to.<sup>1</sup>

The following table gives the percentile ranks and corresponding scores for the group of elementary school boys who were examined in this experiment by the mechanical ability tests compared with those for groups of older boys.

TABLE XIII

Percentile	Elementary Schools 13 <sup>10</sup>	Day Continuation Schools 14 <sup>6</sup>	Technical Schools 16	Secondary Schools	
				14-15	16-18
90th	70	77	85	94	99
75th	58	64	72	84	92
50th	43	51	61	67	77
25th	29	39	46	49	61
10th	19	28	34	34	40

Further studies which have been carried out since the testing of children in this experiment was completed show that these tests of mechanical ability possess definite predictive value for certain kinds of work in which the factors of form relations and manual dexterity are important. They prove to be particularly suited for young and inexperienced boys, and, as mentioned already, are best employed in conjunction with other tests (such as tests for the perception of form relations) in which similar factors occur. Naturally their predictive value has been found to be highest when the situations to which they are to be applied demand combinations of abilities similar to those which they themselves demand. Hence in vocational guidance care has to be taken that the weight attached to success in these tests is proportional to the degree of correspondence between the factors measured by the tests and the factors entering into the occupation.

Generally speaking, the investigators' recommendations of a skilled manual occupation were based upon *combinations* of ability (*a*) in the individual tests of mechanical ability, (*b*) in selected performance tests, and (*c*) in some of the tests of

<sup>1</sup> This empirical procedure seemed to be justified by the results of a vocational selection investigation conducted about the same time, in the course of which similar close connexions between tests of form relations and of mechanical ability were found.

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manual dexterity. The weight attached to a very high score in any *one* of these three groups of tests depended upon the judgment of the investigator as to its importance in the work under consideration. Inasmuch as the combinations of abilities varied greatly from one individual to another, it was not possible to classify the cases exactly in a relatively small number of clearly distinguished categories.

### (d) Manual Dexterity Tests

A preliminary study of occupations showed that most of the children who were about to be examined in this experiment were almost certain to take up some form of manual work. This being so, it seemed highly desirable to obtain some measure of their aptitude for work in which the dexterous control of fingers, hand, and arm would be essential to success.

The Institute's investigation of the problems of vocational *selection* (in the course of which tests had been devised for selecting dressmaker apprentices, weavers, packers, and the like) had already shown that the measurement of such dexterities was both feasible and useful. But the dexterities required for success in one occupation or process usually appeared to be different from those required in another occupation or process. At any rate, tests which had proved most successful in selecting trainees for one occupation had often to be considerably modified when applied to the problem of selecting trainees for another occupation. If this were universally true it would seem as if the measurement of dexterities for the purpose of vocational *guidance* would be an endless task: every occupation for which the child might be fitted would have to be analysed by the methods of vocational selection, and a separate battery of tests for each proposed occupation would have to be worked by the child before his fitness or unfitness could be adequately determined.

At the beginning of this experiment there was a natural reluctance to accept such a view of the problem. Surely, it was thought, there must be some movements which occur in more than one occupation or process, and which the same person can perform with the same skill, no matter where they occur; fine hand-and-eye co-ordination (as, for instance, in threading a delicate lamp filament) might be paralleled by high skill in

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a similar combination of movements found in some other occupation.<sup>1</sup>

It was decided, therefore, to try to obtain a number of simple tests in which movements of different types (as, for example, thumb-and-finger movements, wrist-twisting, independent finger manipulations, etc.) were employed, and to use such tests as a means of distinguishing between those adolescents who were naturally clumsy and those who were naturally dexterous in performing movements of these particular types. It was assumed, of course, that dexterity in movements of a particular type could be regarded as evidence of facility for any occupations in which similar movements are essential. This, at the outset of the experiment, was not a demonstrable fact, although the work of vocational selection had certainly suggested its general truth. Be that as it may, no other method of differentiating between dexterous and clumsy children seemed possible; and so work was begun, tentatively, along these lines.

Several tests of manual dexterity were accordingly prepared and tried out.<sup>2</sup> Those tests which seemed capable of discriminating between children in regard to speed of movement, finger dexterity, and so forth were retained, and norms of performance were prepared for them. The tasks eventually selected for extended use in the experiment were as follows:

- Tapping with forefinger of the preferred hand.
- Tapping with the fingers of the preferred hand, separately and in succession.
- Screw-twisting (by wrist movement).
- Assembling nuts and bolts.
- Placing pegs, taken from a box, in holes in a board, using thumb and forefinger.
- Placing pegs, using thumb and other fingers in succession.
- Taking pegs from holes and replacing them singly, while holding remainder in the same hand.
- Placing pegs blindfold.

<sup>1</sup> For this reason an attempt was made to *describe* movements in terms which might make it easier to compare different occupations. See the Institute's report on *Occupation Analysis*.

<sup>2</sup> The early work on these tests was carried out by Dr F. Gaw and Mr A. Hudson Davies.

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Placing discs in correct positions on a board at a given rhythm.

Tactual discrimination.

Strength of grip by dynamometer.

The general procedure was to give all these tests to both boys and girls. Then, if it seemed desirable to consider a specific group of dexterities in more detail (*e.g.*, those required in dressmaking or in packing), additional tests, chosen from the Institute's series of selection tests and appropriate to the problem, were given. But for the girls, inasmuch as dressmaking was always a possible choice, tests from the series devised for the selection of dressmakers were given as a routine procedure. These tests included threading beads, aiming indirectly, knotting wool, paper-folding, aiming directly, discrimination of parallel lines.

A full account of these tests, with procedure and norms of performance, is given in a separate report,<sup>1</sup> and need not be repeated here. Studies of the results made since the testing of the children ceased have shown that such tests serve very useful purposes. While the abilities required for success in each of them tend to be peculiar to the task itself, statistical analysis has shown that there are resemblances between some of the tests, as also between the tests and the practical tasks of everyday life, which justify the assumption mentioned already—namely, that skill in movements of a certain type (as shown by success in a test in which such movements are employed) may be expected to be exhibited in tasks in which similar movements occur. Hitherto, however, the analysis of occupations and tasks, and of the movements which are performed in them, has not gone far enough to enable us to say exactly what occupations or tasks are related in this way. Until this is done the diagnostic value of a *single* test of dexterity is slight; but, combined into *batteries*, the tests may have a high diagnostic value in relation to a particular occupation.

In this experiment, however, the investigators had in view a number of specific occupations (dressmaking, machining, fancy leather work, scientific instrument making, and the like)

<sup>1</sup> *The Measurement of Manual Dexterities*, Report No. 4 of the National Institute of Industrial Psychology, 1930.

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in which skilled movements of particular kinds were employed. Hence, whenever a boy or a girl showed high skill in manipulating pegs, threading beads, aiming, placing discs, or assembling nuts and bolts, the relation of this skill to some particular occupation was duly considered. In actual practice the two main categories, 'clumsy' and 'skilful,' became resolved into a number of sub-groups such as 'slow-moving but careful,' 'quick and accurate,' 'slap-dash and clumsy,' each of which had a practical bearing upon the occupations under consideration.

Of course, dexterities formed only part of the scheme of inquiry, so that any errors that may have arisen from this somewhat crude and empirical use of the results of the tests of manual dexterity may not have had very serious consequences. The total combination of qualities for any occupation is not easily found, and some degree of unsuitability in respect of one particular quality is not necessarily incompatible with a satisfactory measure of efficiency. On the whole, although in some occupations dexterity factors occupied a prominent place, there were not many cases in which dexterity (or the lack of it) *mainly* determined the choice of occupation proposed.

### (e) Test of Special Knowledge relating to Occupations

At the outset of the experiment it was hoped that some evidence of special interests might be obtained from a study of the child's range of information. Vocabulary is admittedly an indication of *general* ability; but it was thought that if a boy were to show that he possessed *special* knowledge of certain kinds (such as of tools, engines, buildings, etc.), it might be concluded that he was specially interested in such materials and processes, due regard being paid, of course, to exceptional opportunities or instruction. Moreover, this interest might be vocationally significant.

A test of special knowledge was therefore devised, consisting of 150 questions, such as: In what part of a motor engine is the petrol vaporized? Name the tool used in boring a hole in a piece of metal. What instrument does a builder use to get his walls vertical?

In preparing this test the age and experience of the boys had to be taken into account. It seemed useless to include questions requiring expert knowledge of a trade; consequently,

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the questions dealt mainly with those aspects of engineering, carpentry, building, etc., which are likely to be known to an adult or youth of average intelligence, experience, and observation. But it was thought that differences in the distribution of the answers of each boy (as between engineering and carpentry, for instance) might show the direction in which the boy's interests were developing. If this were found to be true for boys a similar procedure might usefully be adopted with regard to girls' occupations.

The range of information dealt with was intentionally restricted to various aspects of the common manual occupations, since the boys who were being studied were nearly all destined for work of this kind. Knowledge of and interest in nature study, art, music, etc., were not included.

Although the results obtained were highly interesting, they did not satisfy the purpose for which the test was compiled. The questions were classified under five heads:

- (i) General.
- (ii) Engines, machines, and metal work.
- (iii) Buildings.
- (iv) Carpentry.
- (v) Miscellaneous (tools and materials).

The scores obtained in each of these five parts were compared. The inter-correlations of the five sub-tests are shown in the following table:

TABLE XIV  
INTER-CORRELATIONS OF PARTS OF THE TEST  
OF SPECIAL KNOWLEDGE

	Part				
	(i)	(ii)	(iii)	(iv)	(v)
(i) General . .	—	.72	.54	.59	.62
(ii) Machinery . .	.72	—	.81	.66	.71
(iii) Buildings . .	.54	.81	—	.68	.55
(iv) Carpentry . .	.59	.66	.68	—	.49
(v) Miscellaneous .	.62	.71	.55	.49	—

The average inter-correlation of these sub-tests is .64.

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As these correlations are distinctly high, it would seem that a boy who is well informed about any one of the occupations is likely to be well informed about all.

The correlations of the test of special knowledge with tests of intelligence (individual and group) are shown in the following table:

TABLE XV  
CORRELATIONS OF THE TEST OF SPECIAL KNOWLEDGE  
WITH TESTS OF INTELLIGENCE

—	Part					Total
	(i)	(ii)	(iii)	(iv)	(v)	
Group Intelligence Test	·73	·76	·68	·56	·74	·92
Individual Intelligence Test (Stanford-Binet) .	·60	·61	·70	·72	·59	·85

The correlation between the two intelligence tests and the total score in the test of special knowledge is as high as that between the two intelligence tests themselves (*cf.* p. 71). This suggests that the test as a whole may prove to be a fairly satisfactory measure of general intelligence.

A test-paper of this kind may, of course, be answered in two ways: (*a*) the answers to separate questions may be distributed more or less equally over *all* sections of the paper; and (*b*) the selection of questions may be in each case mainly from *one* part of the paper (although the total number of questions answered may be the same as if the answers were distributed over the whole paper).

Table XIV suggests that the former is the more likely procedure, and the study of the scores obtained shows that this is actually the case. Among the elementary school boys there were few instances in which there was a sufficiently large difference in the scores obtained in the parts of the test to justify a conclusion as to the boy's special interest. It cannot, therefore, be said that this test effectively serves the purpose required of it. For this reason it was not used in the later stages of the experiment. Unfortunately, during the experiment there was not sufficient time available to reconstruct or adapt it; nor since the examination has there been any opportunity of preparing a more suitable test for this purpose.



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It seems probable (*a*) that, at the age we are considering, the information possessed by the boy is not sufficiently specialized to allow of its being tested by means of questions of a more technical nature than those actually used; and (*b*) that the questions used in the test, being concerned with such knowledge as an intelligent amateur usually possesses, should be regarded as appeals to general knowledge rather than to special knowledge.

It seems possible that, by making the subject-matter more definitely specialized and by increasing the number of questions in each section to such an extent that expert knowledge would be given opportunity to show itself, a test could be devised which would distinguish those with special knowledge and interests from those without them. But whether it would be applicable to and useful for elementary school boys aged fourteen is another matter.

### (f) Tests of Scholastic Ability and Teachers' Reports

It was assumed, in dealing with the first two or three batches of children, that a sufficiently reliable estimate of each child's attainments in school subjects could be obtained from the teachers. Accordingly a special report form<sup>1</sup> was prepared for this purpose, and the teachers were asked to assess the abilities of their pupils on a five-point scale, similar to that used by the investigators. The scale suggested was as follows:

Top 10 per cent., A; next 20 per cent., B; middle 40 per cent., C; next 20 per cent., D; and the bottom 10 per cent., E.

The reports obtained, however, were not very satisfactory, for the standards of marking varied greatly from one school to another. It was, of course, scarcely to be expected that the teachers would be very successful in their use of such an unfamiliar technique. It was therefore impossible to co-ordinate the reports, even when the intelligence measures independently obtained were used as a standard of reference.

In the later stages of the experiment standardized tests of arithmetic and spelling were introduced to supplement the teachers' reports. These tests were taken from Burt's *Mental and Scholastic Tests*. They included arithmetical rules (addition), arithmetical problems (selected from the "Graded Oral Test: Mental"), and spelling.<sup>2</sup> Their chief use proved to be in

<sup>1</sup> See Appendix, pp. 329, 330.    <sup>2</sup> See Appendix, pp. 321, 322

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connexion with recommendations for office- and shop-work, for in these instances satisfactory scores in the intelligence tests and in a specialized clerical test, which was used in doubtful cases, were compared with scores in the arithmetic and spelling tests. It may be added that, as the great majority of the children were likely to enter manual occupations, the determination of their aptitudes for these was more important than a detailed exploration of their proficiency in school subjects, especially since so many of the children (nearly 60 per cent.) had not reached the class appropriate to their age.

The marks obtained in the three tests used indicate that the standard of proficiency in these school subjects was not very high. The norms given by Professor Burt are as follows:

			Age 13	
			Boys	Girls
Arithmetical rules . . . .	Mean score		32.5	30.8
Arithmetical problems . . . .	"		94.2	93.5
Spelling . . . . .	"		80.6	86.9

The distribution of the scores obtained by the children (216 boys and girls) in this experiment is shown in the following percentile table:

TABLE XVI

Percentiles	10	20	25	30	40	50	60	70	75	80	90
Arithmetical rules . . . .	20	25	26½	28	30½	33	36	39	41	44	52
Arithmetical problems . . . .	49	57	59½	62	66	70½	75	80	82½	85	93
Spelling . . . . .	47	56	60	63	70	74	78	82	85	87	92

From this it will be seen that, although these children had reached an approximately normal degree of proficiency in the mechanical operations of arithmetic, they were much below standard in solving problems. Inasmuch as 'intelligence' is a prominent factor in ability of this latter kind, this result confirms the opinion already given (p. 73) regarding the general intelligence of the group.

The extent to which the teachers succeeded in estimating the attainments of these children may be judged from the following table, in which the figures show the score in each test:

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TABLE XVII

	Rating given by Teachers				
	A	B	C	D	E
Boys					
Arithmetical rules . . . . .	35.0	37.2	37.2	34.8	24.3
Arithmetical problems . . . . .	62.0	72.2	85.2	68.7	59.5
Spelling . . . . .	86.0	77.0	77.0	63.8	45.8
Girls					
Arithmetical rules . . . . .	38.6	35.5	28.7	26.1	24.0
Arithmetical problems . . . . .	82.8	61.8	69.3	55.1	46.0
Spelling . . . . .	79.6	77.9	66.5	56.9	65.6

These scores are the averages calculated for all pupils to whom the particular assessment was given.

It will be seen that in the case of the boys only the spelling assessments correspond to the scores, whereas the judgments regarding the girls appear to be much more satisfactory.

The part played by intelligence in these three tests is indicated by the following table of correlation coefficients:

TABLE XVIII

Correlation with Group Intelligence Test (see p. 70) of the Test in	Boys	Girls
Arithmetical rules . . . . .	.39 $\pm$ .060	.35 $\pm$ .061
Arithmetical problems . . . . .	.64 $\pm$ .042	.63 $\pm$ .042
Spelling . . . . .	.74 $\pm$ .031	.67 $\pm$ .038

Since the test in arithmetical rules depends more upon mechanical accuracy than upon problem-solving, the difference between the two tests of arithmetic is to be expected.

Another relation that may be of interest is that between the spelling test and the form relations test (p. 82) as shown by correlation coefficients of .24  $\pm$  .066 and .32  $\pm$  .063 for boys and girls respectively; but whether this is due entirely to the common factor of intelligence or partly to some special factor of visual perception cannot be considered here.

## 4. INTERESTS, TEMPERAMENT, AND CHARACTER

The intelligence tests and the special ability tests already described determine what is the best that a given person can do in a given task during a few minutes of maximum effort. From the nature of his performances and from the scores thus obtained an indication of the probable upper limit of his future achievement is reached. But although the scores for these tests indicate what a person *can* do, they give no direct indication of what he *will* do; they provide us with no information concerning the conditions under which he will be spurred to do his best, the extent to which he will persist in spite of difficulty, or what things he will choose to do when he is left to himself. They yield no knowledge of how he will behave in special situations of danger, of opposition, of isolation, or of how his capacities will be affected by these. They are scores of general or special cognitive and motor abilities: they do not pretend to afford measures of temperamental qualities, although much information about these qualities (*cf.* pp. 104-106) is obtainable by observing how the subject goes about the tests.

Unfortunately for the practice of vocational guidance, the scientific study of temperamental qualities is insufficiently developed to provide much reliable knowledge. At present we have little more than surmises as to the causes of different kinds of behaviour, some of which are corroborated, but none of which has reached the stage of tested scientific generalization. But vocational guidance is an urgent social necessity; it cannot wait until science has laboriously developed better methods for discovering the conditions determining behaviour, and hammered out the generalizations that will conveniently express them. Meanwhile it must base its predictions on those hypotheses that seem most consistent with the rest of our psychological knowledge.

In the present experiment the problem was twofold. First, what are the factors, apart from differences in intelligence and special abilities, which cause one person to succeed in a given job and another person to fail? Secondly, how can these differences, or their latent beginnings, be detected in the fourteen-year-old boy or girl?

## 4. RELEVANT INDIVIDUAL DIFFERENCES

Answers to the first question have been suggested throughout the centuries in terms varying from the changing configurations of the stars to the chemical constituents of the blood. In this experiment an answer was sought first of all in purely descriptive terms. Without attempting to decide whether speedier progress will result by studying the content of the individual's blood or his mind, the relative activities of his glands, or the relative frequencies of his moods, the investigators undertook to inquire into the reasons commonly given for failure in work. This might with advantage have involved a wide survey, comparing the frequency of different reasons given in different occupations. There was, however, no time for such an extensive study. Instead, a tentative enumeration of all the reasons why the young people left their jobs, apart from those connected directly with skill or economic conditions, was made on the basis of the investigator's own observations and of information received during visits to firms.

The reasons thus found were classified under two headings. Under the first, the *employer's* account, were included such reasons as inability to get on with people, inability to work without supervision, inattention to detail, forgetfulness, laziness, insubordination; under the second, the *employee's* report, were included such reasons as restlessness, dislike of working by himself, insufficient money, poor prospects, "Too dirty," "Too monotonous," "Did not like the work," etc. Clearly these reasons could not always be separated from reasons of skill or from economic conditions; it was, therefore, finally decided to consider all reasons given, with the exception of dismissals for slackness and for inability to do the work. The list was then scrutinized in order to find how far the states of mind and behaviour described could be referred to known factors in the psychology of individual differences.

## (a) Character Traits

Common sense relates all these reasons to the concepts in everyday use known as 'character traits.' Thus it is said that a person is unable to work without supervision because

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he is lacking in initiative, that he cannot get on with people because he has no tact, no powers of leadership, no self-confidence. Common sense tends to assume that the matter has been thus sufficiently explained by referring behaviour to character traits. Psychology, however, finds no necessary explanation here, since the character trait is at present not a proved entity, but only a convenient label for a particular kind of behaviour or state of mind when it tends to frequent recurrence. The fact, however, that these words do not in any sense *explain* the differences between people does not mean that they are valueless in psychology. They are useful for descriptive purposes, since they have stable meanings deeply rooted in the language, and hence are likely to introduce less ambiguity of meaning than words newly coined for some of psychology's special purposes, such as, for example, the words 'introversion' and 'extraversion.'

But the interpretation of these reasons for leaving a post in terms of character traits involves not only the use of a convenient label instead of a phrase, but also the implication that the kind of behaviour which it denotes is manifested frequently. When we say that a person has initiative we mean not only that he has once, on a special occasion, originated an activity, but that he tends to do this on many different occasions. This implication is a source of danger in the use of character trait terminology. For there is no experimental evidence to show that a person who dislikes being alone in certain activities will necessarily dislike being alone at all times, or that a person who has made small mistakes in one job will make them in all; though to call him sociable or careless is to imply that one believes he will. Hence if character traits are used in the discussion of temperamental differences it is clear that they must be used only in a descriptive sense to indicate a tendency toward a certain type of behaviour, without any assumptions being made as to the generality of that behaviour in varying circumstances, or as to the existence of any entity or quality which is the cause of that behaviour.

It was decided, however, that in the present state of our ignorance it would be convenient to consider individual differences in success at work first in terms of character traits. The traits selected were those which by definition seemed connected

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with the reasons for failure in work most commonly put forward. They will be found in the list<sup>1</sup> given at pp. 104-106, with descriptions of the attitudes or behaviour to which each trait is intended to refer.

### (b) Interests

Such a list, however, by no means covered the whole ground. In particular it provided inadequate means for interpreting whatever facts underlay the phrase "Did not like the work," and also possibly "restlessness" and "Too monotonous," although the last two may be in part associated with the trait of curiosity. This raised the whole question of interest in work.

Here again the common-sense explanation and terminology were first considered and their implications scrutinized. Clearly, what a person likes to do is a crucial point in vocational guidance, since, although there may well be less correlation than has sometimes been assumed between interest and ability, there is no doubt about the close relation between interest and output of energy. In the absence of any precise knowledge as to the factors determining interest, this aspect was treated on the same lines as the specific characteristics of behaviour—that is, in its objective expressions, whether explicitly stated or implicitly shown in the choice of leisure activities. A tentative threefold classification of interests was employed, according to the kind of material dealt with in the interesting activity—that is, whether mainly concerned with (a) people, (b) things, (c) books, papers, or figures.

Both occupations and children were classified in these terms. Thus occupations such as those of shop-assistant or children's nurse were considered as falling under the heading "Work with people"; engineering, skilled trades, or routine factory work as "Work with things"; and office or pay-desk work as "Work with books, papers, or figures." The classification is in no sense rigid, since certain occupations, such as, for example, waitress and telephone work, fall between the classes.

<sup>1</sup> One concept in this list, "general emotionality," is not taken from ordinary speech, but is a technical term employed by Cyril Burt (*The Young Delinquent*, p. 507; University of London Press, 1925) to denote a hypothetical factor pervading all manifestations of emotion, just as 'g' is a factor which, it is assumed, underlies all manifestations of 'i'.

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The classification of children on the same lines was based on differences in the nature of their hobbies, leisure occupations, and preferences in school subjects. The final choice as to the class in which any child should be placed was based on a consideration not only of direction of interest, but of special temperamental qualities and also of special abilities. The classification will therefore be discussed at greater length in Section 5 of this chapter, "Arriving at a Recommendation" (pp. 121-133), since full use of it can be made only by reviewing all the data available about the child.

### (c) General Type

In addition to individual differences in character traits and in direction of interest a third aspect was considered, which was not directly connected with any of the specific reasons for failure, but which might nevertheless bear some relation to all of them. This aspect was less definite, and was concerned more with the personality *as a whole* than with any *isolated* specific qualities, although it included such factors as general appearance, manner, and social background. It was felt that the inclusion of such a vague concept in this study of temperamental qualities was justified by the following considerations.

Workers in different occupations tended to show certain distinctive characteristics as regards outward appearance. This seemed connected with the fact that the Juvenile Employment Officers in the Employment Exchange appeared to the investigators to select candidates for recommendation to posts largely on the basis of an intuitive assessment of general suitability of type. Into this judgment there entered considerations of the educational attainments, general health and physique, appearance, and manner of the child, based partly on information furnished by the school report, partly on conversations with the child and observations of his conduct during the interview. Such general judgments of type seemed to be derived from the experience gained by these officers in their observations of the personnel employed in a variety of occupations in different firms during frequent visits to employers' establishments.

Thus it was often said that a girl was not the type for dressmaking, or for chocolate-packing, or for domestic service.



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Evidently, too, the employers used a similar method of judging suitability. Hence, however appropriate a child's actual capacities might be for a particular post, he might fail to obtain it if he did not also conform to the type expected for that particular occupation and by that particular employer.

It is possible that this procedure is not as arbitrary as might appear at first sight. Although it ignores the fact that science can demonstrate little correlation between outward appearance and capacity, it does take into account certain facts of group psychology which, no doubt, play an important part in the adjustment of the worker to his work—a part which in certain occupations may be a more important determinant of success (through its relation to incentive) than actual ability. Where great differences in social background, with resulting differences in outlook, manners, and interests, occur among those who work in close physical contact (often side by side at the same work-table), they are not likely to make for the development of that team spirit which has an incalculable but rarely negligible influence on the contentment and efficiency of the individual worker. This third aspect, then, concerned with ability to fit into and to become part of a particular social group, was considered worthy of investigation.

It was not assumed that the technique for judging this aspect, as used in employment work, had necessarily any scientific validity, for it involved, as we have just seen, a concept of type formed from a composite of such varying factors as differences in physique, education, social background, and general manner. It was thought, however, that this empirical technique did draw attention to an aspect of the study of temperament which science could not wisely ignore—that is, the study of the personality as a whole, as opposed to the study of such separate items as character traits or specific interests. No attempt was made to provide a classification or schedule in terms of which this *total* aspect might be recorded; so little is known of it that any rigid or precise system would necessarily be arbitrary, and might even tend to exclude facts of greatest significance. The only provision that was made for systematizing the differences in these general impressions consisted of certain headings added to the schedule of character qualities. These were cleanliness, neatness, expression, and manner. The general

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impression itself was left to be recorded in whatever terms occurred spontaneously to the observer.

These three aspects, then, of individual differences in temperament were selected for study: first, differences in habitual attitudes and behaviour in various classes of situation; second, differences in direction of interest; and, third, differences in total personality as manifested in the general impression left in the mind of an observer. It was realized that this last aspect was a highly subjective one, and therefore liable to be a source of error in a scientific experiment. On the other hand, applied scientific work, when dealing with human beings in their natural environment, cannot employ only precise objective techniques and ignore those aspects of the problem with which science is not yet competent to deal, since it may be those very aspects which will most materially influence the results.

We are now in a position to consider

### (d) The Schedule and Definitions of the Terms used for Temperament Ratings in this Experiment

**APPEARANCE.** Covers looks, refinement, carriage, height, and development (including pubescence).

*Cleanliness.* (a) Clothes, (b) person.

*Neatness.* Adequacy and suitability of clothes.

*Expression.* Pleasantness or attractiveness as opposed to repulsiveness or deformity.

*Manner.* Covers shyness, restlessness, cheerfulness, anxiety, nervousness, etc.

**INDUSTRY.** A composite of the following traits:

*Energy.* High degree of activity and much effort put forward, both in work and play, as opposed to languor and lethargy.

*Persistency.* Perseverance in spite of difficulty or when task is disagreeable or monotonous.

*Reliability.* Ability to be depended on as regards memory, thoroughness, etc., even in uncongenial circumstances.

**GENERAL MENTAL SET OR ATTITUDE.** Includes the following:

*Alertness.* Quickness in apprehension of any change

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in the situation, as opposed to absent-mindedness and day-dreaming. (Observed in manner, response to instructions, etc.)

*Control of attention.* Ability to resist distraction. (Observed during tests, especially when others are in the room.)

*Calmness under pressure.* Ability to work calmly at high speed, as opposed to confusion. Coolness in difficulty or emergency. (Observed in performance tests.)

*Carefulness.* Deliberateness and control (though not necessarily slowness), as opposed to thoughtless and 'slap-dash' behaviour. (Observed in manual and performance tests.)

*Co-operativeness.* Willingness to work in with other people, sympathetically to adopt their aims and point of view, as opposed to selfish interference.

**LEADERSHIP** (spontaneous taking of the lead among equals). May be regarded as a composite which includes:

*Assertiveness.* Desire to impose will or opinions on others, as opposed to yielding tendency. (Observed in reaction to commands, general behaviour, etc.)

*Ambition.* Desire for distinction resulting in effort to get on, as opposed to easy contentment or aimless drifting. (Observed in vocational expectations.)

*Initiative.* Assumption of responsibility for suggesting or embarking on new work, new hobbies, games, etc., without direction from others.

*Self-confidence.* General attitude of confidence in own ability. Not unduly anxious about mistakes.

## GENERAL INSTINCTIVE TENDENCIES.

*Fearlessness.* Insensibility to danger (distinguished from bravado), as opposed to general timidity (which may be manifested as marked docility, shyness, submission) or special fears.

*Sociability.* Preference for being with other people, especially a group of people.

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*Tenderness.* Affectionate, responsive to personal appeal, as opposed to hardness and meanness, influenced by affection as a motive.

*Desire for change and variety,* as opposed to ability to endure monotony.

GENERAL EMOTIONALITY. High excitability of all or most of the emotions, as opposed to apathy, stolidity, and placidity.

EXPRESSION IN PRACTICAL ACTION.

*Quickness* (in physical things). Natural speed of action when there is no need for hurry—a temperamental factor not to be confused with rate of performance in speed tests, or with quickness of apprehension.

*Constructiveness.* Desire for expression in any practical manner, but chiefly in the making of things.

QUALITY OF SPEECH was noted by marking one or more of the following: stammer, indistinct, distinct, careless, good or bad accent, pleasant tone, harsh, etc.

### B. METHODS OF STUDYING INDIVIDUAL DIFFERENCES

Those qualities of temperament having been selected which seemed most relevant to the problems of vocational success, it was then necessary to find the best methods of estimating them.

#### (a) The Temperamental Test

The method of the temperamental test was first considered. The advantages of this seemed to be the theoretically reliable and precise measurement made possible by means of the standardized situation, the controlled response, and the numerical recording of results. In practice, however, the reliability of these tests is found to be low, and great difficulties have been experienced both in the interpretation of results and in determining whether the tests do really measure what they were devised to measure. A brief consideration of the problem suggests that these drawbacks may depend on factors inherent in the very nature of temperament itself. Thus the reliability

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of those objective tests for ability which have proved so useful in the case of intelligence depends on the assumption that every person tested will endeavour to do his best. A standard condition of maximum effort is aimed at, and is apparently achieved, judging by the practical successes of intelligence tests. This is to be expected, since it needs little persuasion to induce most people to display their skill.

Qualities of temperament are, however, of a different order. They are often such as a person would prefer not to display. Hence he may hit upon most elaborate means to avoid giving himself away, once he is put on his guard by knowledge of the fact that he is being tested. Further, the very qualities to be judged are in many cases precluded from showing themselves by the nature of the test situation, since they are in general habitual and spontaneous, while the objective test essentially involves a few moments of unique and directed activity. True, certain attempts have been made to overcome these difficulties by tests which are so devised that the subject cannot detect their real purpose. Those for the trait of deceit<sup>1</sup> are a typical example. It has been found, however, that, although a fairly reliable objective measure is thus obtained for a specific type of behaviour in a specific situation, the results have little predictive value for manifestations of the trait of deceit in situations of a different nature.

### (b) Casual Observation

As regards precision, this method stands at the opposite extreme from the method of the objective test. The results obtained by it often seem more relevant and conclusive than those from whole batteries of test scores. But since it may result in disastrous mistakes no less than in flashes of brilliant insight, it could not be relied upon as the sole method of study in a scientific experiment.

### (c) The Controlled Interview

A third method was considered, which seeks to combine some of the objectivity of the test with the intuitive insight of the free judgment. This is the method of the controlled

<sup>1</sup> H. Hartshorne and M. May, *Studies in Deceit* (the Macmillan Company, 1928).

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interview, which assumes that qualities of temperament are not intrinsically unmeasurable, but that the present technique of the mental test provides too crude an instrument for the purpose. In other words, trained intuitive observation is considered to be the only instrument as yet discovered which is delicate enough to detect qualities so subtle and complex as those of temperament. The reliability of this method had already been demonstrated by the work of Professor Burt in connexion with the earlier joint experiment in vocational guidance (see p. 27); it was therefore adopted in this experiment also.

The judgments formed in this method are based on observations of spontaneous and unwitting behaviour, but they are rendered more precise and objective by means of certain special techniques. These techniques comprise (*a*) precise definitions in terms of attitude and behaviour of the qualities to be judged and (*b*) a scale for the rating of the degree of each quality. The use of the method involves a skilled manipulation of the social situation in the personal interview. Although the qualities to be judged are determined beforehand (and to some extent also the particular items of bearing and behaviour upon which the judgments are to be based), the exact means adopted in order to induce the display of this evidence must necessarily be suited in each particular case to the personality both of the examiner and of the subject.

In this experiment the judgments of the temperaments of the various children were based on the following data: observation of the child's manner, bearing, facial expression, gestures, speech, walk, and behaviour during the interview and during the test situations; and information about his past history, interests, ambitions, home surroundings, and school activities. The information and observations thus obtained were noted down, and at the end of the interview all the data about the child were reviewed as a whole, and summarized in terms of the Temperamental Schedule (see p. 109), each quality being assessed by means of a five-point scale—*a*, *b*, *c*, *d*, *e*. Assuming that the frequency of each of these traits, like most mental capacities, follows the normal curve, then we may define each of the letters used in statistical terms. Thus a child was marked *a* or *e* for a particular temperamental quality according as the

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## TEMPERAMENTAL SCHEDULE

### General appearance:

Neatness . . . *a b c d e*

Cleanliness . . . *a b c d e*

Expression . . . *a b c d e*

Manner . . . Shy, nervous, restless, anxious, cheerful, dull, easy.

### Quality of speech.

### Special traits:

Assertive . . . . .	<i>a b c d e</i>	Submissive.
Ambitious . . . . .	<i>a b c d e</i>	Unambitious.
Initiative . . . . .	<i>a b c d e</i>	Lacks initiative
Leadership . . . . .	<i>a b c d e</i>	Poor in leadership.
Constructive . . . . .	<i>a b c d e</i>	Lacking in constructiveness
Quick . . . . .	<i>a b c d e</i>	Slow.
Alert . . . . .	<i>a b c d e</i>	Absent-minded.
Careful . . . . .	<i>a b c d e</i>	Careless.
Self-confident . . . . .	<i>a b c d e</i>	Diffident.
Calm under pressure . . . . .	<i>a b c d e</i>	Distressed under pressure.
Control of attention . . . . .	<i>a b c d e</i>	Poor control.
Energetic . . . . .	<i>a b c d e</i>	Lethargic.
Persistent . . . . .	<i>a b c d e</i>	Soon gives up.
Reliable . . . . .	<i>a b c d e</i>	Unreliable.
Industrious . . . . .	<i>a b c d e</i>	Lazy or intermittent.
Co-operative . . . . .	<i>a b c d e</i>	Not co-operative.
Sociable . . . . .	<i>a b c d e</i>	Solitary.
Tender . . . . .	<i>a b c d e</i>	Lacking tenderness.
Fearless . . . . .	<i>a b c d e</i>	Timid.
Desire for change . . . . .	<i>a b c d e</i>	Contented with monotony.
General emotionality . . . . .	<i>a b c d e</i>	Unemotional.

### Remarks:

strength of that quality manifested by him was about equal to that shown by the top or by the bottom 10 per cent. of all fourteen-year-olds when ranked in order of merit. Similarly *c* was used to represent the strength of that quality as shown by the middle 40 per cent., and *b* and *d* by the upper and lower 20 per cent. respectively. In the earliest cases examined at least two examiners saw each child, and each independently filled in a temperamental schedule. When the procedure was changed (see p. 40), and one investigator carried through the whole examination, the teacher was asked to give his report on the child in terms of the same schedule, in order that two opinions might be compared.

#### (d) The Study of Interests

The method of the controlled interview was also used for the study of interest, although here the results were not recorded in quantitative terms, since a previous attempt by the investigators to measure interests by means of a test of special knowledge<sup>1</sup> had apparently produced only another measure of intelligence. It therefore seemed best to record each child's interests in qualitative terms, including statements of his vocational ambitions and notes as to his favourite school subjects and his chief leisure occupations.

It was realized that this procedure was not entirely satisfactory so far as the verbal expression of ambition was concerned. When, for example, the answer to the question, "What do you want to do when you leave school?" was followed up by "Why do you want to do that?" it was clear that many fortuitous factors were influencing the choice. Often it seemed to be a matter of fashion, as in one school where nearly every boy wanted to become a printer, in spite of the fact that vacancies in printing were exceedingly difficult to find. It was also observed that the answer might change from week to week when the same question was put to the same child by different investigators. Clearly, many of the children had given only casual thought to the matter of a career, and many more knew so little about the occupations that it seemed impossible to take their explicit wish at its face-value.

Nevertheless, both the wish and the reason given for it may

<sup>1</sup> See pp. 92-95.



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have had some underlying significance determinable if suitable means could be devised. A set of about thirty picture-postcards was therefore collected showing men<sup>1</sup> engaged in various trades and occupations. The choice had been guided by two considerations: the pictures must show some activity which might give expression to certain general interests (in, for example, machines, making things, writing, books, animals, the country); and they must depict some situation likely to arouse a specific emotional attitude, such as fear of danger, sense of power, or excitement. Each of the cards in this latter group could be classified according to the positive or negative aspect of the emotional response aroused. For example, a photograph of a policeman holding up traffic in the Strand might suggest either fear of responsibility or satisfaction of desire for self-assertion, while a picture of a fireman engaged in rescue work might arouse a sense of the delights of heroism or the fear of physical danger. The whole series was chosen to provide possible stimuli for the following emotional attitudes: desire for power, excitement, new experience, social distinction, ideal behaviour, constructive self-expression, financial security; and such negative aspects as fear of responsibility, of danger, of loss of social status, of making mistakes, of unemployment, and the dislike of monotony. All names or titles on the pictures were removed.

The cards were given to each boy, who was told to sort them into three piles according to whether he would like or dislike "to be the man in the picture," or whether he "would not mind either way." The cards in the 'like' and 'dislike' piles were recorded, and after all had been sorted the boy was asked to pick up the cards in these and explain the reason for his placement of each; his explanations were recorded verbatim. Although the results lend themselves to quantitative expression, there has not been an opportunity to develop a method for their scoring and standardization. They were here used solely as a source of additional data in the interview upon which to base estimates of character qualities and diagnosis of dominant interest. It was found that the explanations given, however scanty and incoherent, could without great difficulty be

<sup>1</sup> The test was used only in the case of boys, as it was not possible to find suitable material for the girls.

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classified according to the nature of the underlying emotional response. Thus, although a picture of tiger-hunting in India was generally placed in the 'dislike' pile, with the reason that "You might get killed," one boy placed it among the 'likes,' with the explanation that the hunter was able "to get valuable skins." Similarly, while one boy wanted to be a Horse Guards sentry, because "everybody admires you," another disliked the idea because of "being away from home. Don't often see your mother and sisters."

Vividness of imagination was also brought out by this test; for example, although a frequent objection to the occupation of a deep-sea diver was the possibility of being "killed by sharks and terrible fishes," one boy was afraid that "sharks might dig a hole in the air-tube of the diver." In certain cases such answers suggested the existence of obsessive anxieties. Note, for example, the explanations given by one boy for putting the following cards in the 'dislike' group (he put only three of the total of thirty cards in the 'like' group).<sup>1</sup>

Coster with vegetable barrow.	"Frightened you'd get locked up."
'Zoo' keeper feeding cranes.	"Frightened of children doing harm to the animals."
Ploughman on the Downs.	"Catch a lot of germs and illness. They get into the grass and that."
Postman collecting letters.	"Frightened of losing letters and getting into trouble."

It was interesting to observe the complete lack of embarrassment with which these boys expressed their dislike of what they considered to be dangerous situations. Thus, one boy, having put most of the cards in the 'dislike' pile, on the grounds of physical danger, said he would like to be a weaver because "You couldn't hardly get hurt."

Some of their remarks revealed the extent to which these fourteen-year-olds had absorbed ideals with regard to fighting for one's country. Thus, while six in a group of thirty-seven (about 16 per cent.) definitely disliked the idea of becoming

<sup>1</sup> Subsequent follow-up of his industrial history showed that this boy had nineteen posts in twenty-two months; three of them were held for less than a week, and only one for more than three months. The few reports on his work and reasons for leaving that it was possible to obtain were all ambiguous, but the above explanations suggest that irrational fears would be likely to play an important part in his career.

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soldiers, only one of these objected explicitly on the grounds of danger, while the other five suggested pacifist reasons. There were some interesting views expressed on posts of varying social status. One boy objected to the idea of being a policeman because "They think theirselfs too posh," while the following were among the responses given to a picture of the Bishop of London: "Not much outdoor life"; "Couldn't go anywhere you like"; "Not a very good job"; "Sooner work and earn your living than always having to keep things in order in a church"; "Sooner be an engineer: more in it."

It was found that this test became a very valuable addition to the controlled interview where the boy was very shy and unwilling to talk about his ambitions. In most cases it provided data upon which to base the classification of each child according to whether his dominant interest was in work with people, things, or books. The exact significance of the explanations given, however, so far as they represent permanent attitudes, cannot be here determined. The explanations are of the nature of free associations, and even if they are but random rationalizations of the child's real motive in choosing they at least give an indication of the trend of his ideas of the occupational world. Before any more precise results can be obtained as regards individual differences the test must be applied widely, the most frequent response to each card discovered, and the others scored in terms of deviation from the norm, as was done in the Kent-Rosanoff Word Association Test.

### C. EVALUATION OF THE METHODS

#### (a) The Reliability of the Estimates

A preliminary check on the value of temperamental estimates may be obtained by seeing whether the assessments of qualities show a normal distribution. If (as was sometimes actually the case) they do not, there are three possible explanations: (a) the traits selected differ from other mental capacities in respect of the nature of their distribution; (b) this group of elementary school children shows some special tendencies in respect of temperament as compared with the general population; or (c) certain errors have occurred, either in diagnosis or in the method of assessment, causing the

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observers to over- or underestimate particular traits. There is here no evidence for or against the existence of the first possibility, but the second is unlikely, since the environmental conditions for this group appeared to be broadly typical of those for urban school children in general. Certain conditions of the experiment may be considered as bearing upon the third possibility.

An asymmetrical distribution was found to be most marked in the judgments of "co-operativeness," where a positive bias was shown, and of "leadership," for which there was a negative bias in the case of boys only. So far as "leadership" is concerned, the standard may have been at fault: for the investigators may have tended to judge this trait by comparing it with the degree shown by the average fourteen-year-old in *secondary* schools, where, owing to the nature of the educational system, more emphasis is laid on its development; in the elementary school boy the trait is probably less apparent, but is nevertheless present in a fairly large measure. With regard to the assessments of "co-operativeness," it is possible that the nature of the data upon which the judgments were based may have some significance. For this particular trait would be especially manifest in the test situation, and judgments would be greatly influenced by the child's response to the examiner and by his willingness to undertake the tests. But, inasmuch as the children enjoyed the tests and looked on them as providing a welcome break in school routine, it is probable that they would appear unusually co-operative.

Another aspect of reliability is seen in the extent to which two different observers agreed with each other. The following table shows the amount of agreement between all pairs of judgments given by two independent observers of each child for the whole list of traits. It will be noted that 87·3 per cent. of all the judgments show a difference of one place, or less, on the five-point scale.

TABLE XIX

AMOUNT OF AGREEMENT BETWEEN TWO OBSERVERS

(i)	Complete agreement . . .	40·1 per cent.
(ii)	A difference of one place . .	47·2 " "
(iii)	" " " two places . .	11·6 " "
(iv)	" " " three places . .	1·1 " "

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It seems justifiable, therefore, to conclude that some factors in individual differences in temperament are being estimated quite consistently, though not precisely, by this method. The problem then arises of determining the predictive value of these estimates.

### (b) The Validity of the Estimates

In the case of tests for ability there is usually some independent criterion available, such as school attainments or industrial output, by comparison with which it is possible to determine whether the tests actually measure what they were intended to measure. In the case of temperament, however, no such criterion is available. The only possible source of information as to the actual types of behaviour which have been here classified under the headings of assertiveness, timidity, sociability, and the like, would be the opinion of parents and teachers. That of the former is difficult to elicit and, as found by experience in home-visiting, so vague as to be useless for scientific purposes. The teachers, on the other hand, were in many cases able to offer very useful observations, and sometimes penetrating comments, on a child's behaviour in school. It was found, however, that these spontaneous opinions were more valuable than the results of an attempt to persuade the teachers to express them in such quantitative terms as would make possible comparison with the investigator's judgments. For, although throughout the greater part of the experiment the teachers were asked to fill in a temperamental rating scale for each child, and although the method of rating was carefully explained, the principle of assessment on the basis of the normal curve of distribution was not understood, with the result that an excessive proportion of *a*'s and *e*'s was awarded. It was therefore difficult to make any comparison between the investigator's ratings, based on the result of an interview, and the judgments of those who had had more extensive contacts with the children.

The other method for discovering the predictive value of these estimates is by study of the industrial careers of those tested. The difficulty here again, however, is to obtain any objective criteria against which to compare the estimates. No doubt it should be possible, by an intensive study of individual

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case histories, to trace connexions between the type of occupation for which the boy or girl gives the report "Liked the work" and particular items in the temperamental estimates made in the vocational examination. It is difficult, however, to secure sufficiently detailed case-histories to make possible a quantitative measure of such relationships. For the same reason no attempt could be made to determine the predictive value of the general impression, since here it would be necessary to discover the number of failures in specific occupations on the score of inappropriate type, and such information was not obtainable.

### (c) The Results of the Study of Interests

One of the chief problems connected with the study of interests was to determine how far the child's expressed ambition was significant of a fundamental vocational bent. This question could not be settled in general terms, but depended upon the characteristics of each child. In some cases, when the test scores contra-indicated the occupation suggested by the child himself, the expressed ambition was ignored. In others, where the total picture of the child's situation and temperamental make-up suggested that the ambition was dependent upon more deep-seated trends, the test scores were given less weight, provided they did not definitely negative the desired occupation.

Case 113, for example, was a boy with an excellent school record and a mental age of 16 years 8 months, whose performance test scores were only slightly above average, while his manual and mechanical abilities were in no way outstanding. He was also quick, alert, and ambitious, with a good appearance and a brisk manner. In brief, he appeared to be just the type of the successful clerk, and this work had been suggested both by his parents and by his head teacher. His own ambition, however, was to become an engineer. Although there was apparently no objective evidence to show the basis of this ambition, it was the opinion of the investigator that the boy was not one to express an idle wish accidentally acquired through suggestion from others; neither was he likely to adapt easily to uncongenial circumstances or, according to a note made at the time of the interview, "to work well against the grain." Although his assets in respect of special abilities and temperamental qualities pointed to clerical work, his scores in practical tests, as already

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stated, were in no respect below the average. He was therefore advised to take up engineering. This recommendation, however, was not accepted at the school conference, and in the end he obtained his first post as an office-boy. His subsequent career shows six different clerical posts, all held for less than six months, with the following reports from the employers. After one week in a post: "Smart boy, but not reliable, never in office when wanted. Soon bored and loses interest. Plays about"; after eleven weeks in another firm: "Careless, lost letters, sent them to wrong places, etc."; and after two months in a third: "Not really suited to office work. Can't do jobs on his own." Finally he obtained work as a van-boy on the railway, and when last seen reported, after 1 year 5 months in the post, that he liked it, but that there were no prospects.

In general, if the test scores and estimates of temperament pointed to several vocational possibilities of equal suitability, whichever was most in accordance with the child's expressed ambition was selected as the first recommendation. Where the expressed ambition was not definitely contra-indicated by the tests and estimates, in the absence of any outstanding suitability the expressed ambition was sometimes given as the second or third recommendation.

TABLE XX  
RELATION BETWEEN THE CHILD'S VOCATIONAL WISH  
AND THE RECOMMENDATION GIVEN

—	Girls	Boys
(a) Cases in which child's wish is the same as first recommendation . . . . .	Per cent. 50.5	Per cent. 35.8
(b) Cases in which child's wish is the same as second or third recommendation . . . . .	9.9	8.3
(c) Cases in which child expressed no wish . . . . .	8.1	9.9
(d) Cases in which recommendation differed from child's wish . . . . .	31.5	46.0

Information was sought as to the significance of each child's vocational wish by a study of the industrial after-careers. All those were selected from the experimental group who had at any time held a post similar to the ambition which they had expressed before they left school (27 per cent. of the boys and 33 per cent. of the girls). A measure of their success in this

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occupation was then obtained from a study of the employer's report and the child's own report.<sup>1</sup>

TABLE XXI  
DISTRIBUTION OF EMPLOYERS' REPORTS SHOWING RESULTS OF  
FOLLOWING OWN WISH

Type of Post	Number of Cases	Grade of Employers' Report					
		1	2 +	2	2 -	3	4
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
All posts for which a report was obtained	Boys 422	9	9	55	5	13	9
	Girls 231	14	6	51	6	10	13
Posts in accordance with child's wish but not recommended	Boys 32	3	16	53	3	9	16
	Girls 27	11	11	33	18	11	15
Posts in accordance with recommendation but not in accordance with wish	Boys 37	13	11	59	3	8	5
	Girls 39	41	8	36	3	3	10
Posts in accordance both with wish and recommendation	Boys 28	21	7	61	7	4	0
	Girls 40	21	15	49	8	3	5

TABLE XXII  
DISTRIBUTION OF WORKERS' REPORTS SHOWING RESULTS OF  
FOLLOWING OWN WISH

Type of Post	Number of Cases	Grade of Workers' Report					
		1	2 +	2	2 -	3	4
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
All posts for which a report was obtained	Boys 398	2	3	48	9	33	4
	Girls 265	9	3	51	7	26	5
Posts in accordance with child's wish but not recommended	Boys 27	4	4	44	4	44	0
	Girls 25	4	8	64	12	8	4
Posts in accordance with recommendation but not in accordance with wish	Boys 32	3	0	41	12	37	6
	Girls 34	15	6	62	6	12	0
Posts in accordance both with wish and recommendation	Boys 29	7	3	65	3	7	14
	Girls 41	15	22	49	5	7	2

It will be seen (Table XXI) that there are fewer grade 1 employers' reports among those who obtained work which they

<sup>1</sup> These reports were graded according to the degree of satisfaction expressed with the worker or the work. Thus, grade 1 consists of those above average satisfaction; grade 2 + slightly above average satisfaction; grade 2 average satisfaction; grade 2 - slightly below average satisfaction; grade 3 unsatisfactory; grade 4 irrelevant. See Chapter VII, p. 192 *et seq.*



wanted, although contrary to the advice given them, than among the whole group. A similar difference is shown in the workers' reports only for the girls (Table XXII). There are also many more grade 1 employers' reports and fewer grade 3 employers' reports among those whose work agreed with the Institute's advice rather than with their own wish, than among those who followed their own wish irrespective of the advice given. When the recommendation and the wish coincided there are still more grade 1 employers' reports and fewer grade 3 reports, but this appears only for the boys. In the case of the girls (Table XXI) success seems to have diminished rather than increased when wish and advice are in agreement. The workers' reports (Table XXII) disclose less marked advantages of the recommended work over the desired work, though for the girls these are 15 per cent. as opposed to 4 per cent. grade 1 reports. When the post is in accordance with both the wish and the recommendation, moreover, there are many more grade 1 reports and fewer grade 3 reports than when the post was in accordance with wish alone. It may be concluded in general that the child's wish by itself tends to be a less reliable criterion of future success than the Institute's recommendation, but when wish and recommendation coincide a more reliable criterion is obtained.

It appears that 44.1 per cent. (boys) and 60.4 per cent. (girls) of all the recommendations given coincided with the children's wishes, while among the group of those who have at any time obtained the work they wanted 50 per cent. (boys) and 76 per cent. (girls) of the recommendations and wishes coincided. The differences shown suggest two possibilities: either that the Institute's recommendation strengthened the child's determination to find the work he wanted, or that, in those cases where the advice given was in accordance with the wish, it was because the investigator correctly diagnosed the wish as being more than a passing fancy (*cf.* Case 113, pp. 116-117).

An example of a persisting wish, possibly reinforced by the Institute's recommendation in combination with a particular type of temperament, is shown in Case 112 (girl). This girl wanted to take up dressmaking, and was recommended to the wholesale branch of this occupation. In three and a half years she had had fifteen different posts, six of which

were held for less than a week. Of these fifteen ten consisted of dress-machining, and none of the reasons given for leaving was definitely connected with suitability of the work. Under the heading of "General Impression" in the vocational examination record she had been described as a "Tomboy type, generally impulsive"; and the only employer's report on her work that it was possible to obtain ran, "Not very satisfactory, 'mikes,' and is noisy." Her final post, however, up to the last date of recording, was again machining, and was held for nearly a year; while she herself reported that she liked it very much and was satisfied with its prospects.

#### D. GENERAL VALUE OF THE METHODS

The greatest difficulties besetting any attempt to diagnose individual differences in temperament in the child of fourteen are not those which might appear at first sight. Thus, the task of setting him at ease, and of distinguishing those answers in the interview which were sincere expressions of an attitude from the deliberate attempts to 'play up,' proved less formidable than has sometimes been supposed. It was not in connexion with technique, therefore, but rather in the interpretation of results, that the main difficulties arose, and this was due in part to lack of knowledge of the general laws of growth in the emotional life. Although the results of the diagnosis based on a short interview may be in accordance with the opinions of those who have been in intimate contact with the child for several years, they may nevertheless have doubtful predictive value, owing to the possibility of changes occurring during the period of adolescence, or owing to the effects of the sudden break from the school to the work environment. Further research is urgently needed, not only in order to map out the significant factors in temperament, but also to determine the rate and manner of their development.

It is, indeed, quite possible that the method of attempting to predict future behaviour in terms of past and present behaviour is not very reliable; that, in fact, although there are certain consistencies and uniformities in behaviour, these are not sufficiently rigid to warrant such prediction. It may be that there are certain internal, more or less constant factors determining behaviour which may, according to circumstances, express

themselves in a variety of ways. On the other hand, a person may act in a particular fashion for a variety of different reasons, and the significance of such conduct for the prediction of future behaviour will largely depend upon the nature of its underlying motive. In other words, a study of behaviour by itself may be misleading without a knowledge of what it signifies to the person concerned.

In this experiment, however, such difficulties were in part avoided by the elasticity of the methods used. The controlled interview, although making use of observations of overt behaviour, essentially involved an exploration of the subject's inner attitudes and mental processes. As yet there are no classifications or definitions available for the recording of all the knowledge so obtained; the facts must therefore be described by the observer in whatever terms he is able to apprehend them. It was found that one or two spontaneous phrases describing attitudes would often give a more vivid picture of a child and be of more use in framing the recommendation than ten or twenty precise estimates of qualities; as, for example, the following comment by a teacher: "She seems worldly wise and impatient of school restraint, but loves sports and dancing. Contemptuous and suspicious of anything highbrow."

At present, therefore, it seems essential that all attempts at precise measurement should be combined with a free exercise of the examiner's spontaneous observation and judgment. Eventually it may be possible, by surveying all the descriptive material obtained from this preliminary exploration of an uncharted area, to isolate certain factors which are fundamental determinants of differences in behaviour. Many attempts in this direction are being made, but none was sufficiently advanced to be used at the time of this experiment.

## 5. ARRIVING AT A RECOMMENDATION

Descriptions have now been presented of the methods adopted in this experiment for the assessment of each child's individual characteristics. For this purpose it was necessary to isolate the various aspects of the child's innate qualities and individual experience, in order that these might be measured or estimated in as precise terms as possible. Once such an *analysis* was

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completed, however, it became necessary to effect a *synthesis* of the information thus obtained, in terms of the requirements of occupations.

The principles underlying such a synthesis have been described in an earlier report,<sup>1</sup> where the process has been referred to as one of progressive elimination.

Starting first of all with the factor that seems the most general, and therefore the most widely influential, and then proceeding step by step to so-called group-factors, and ultimately to factors quite specific, whole classes of unsuitable occupations are gradually eliminated, and the choice in the end is narrowed down to one or two particular types of employment.

Although the experience gained in the present experiment does not challenge the theoretical validity of this method of arriving at a recommendation, it does serve to emphasize certain practical difficulties which arise owing to lack of some of that psychological knowledge which the scheme presupposes. Thus the accumulation of statistical data from test results has raised difficulties in the interpretation of the meaning of certain scores, particularly in the performance tests and manual dexterity tests. Moreover, further knowledge of occupations has increased the difficulty of finding adequate terms in which to express vocational recommendations. Experience has also emphasized the fact that the conclusions to be drawn from any single item of knowledge about a child, whether based on a test score or on observation and information, must always be considered relatively to the rest of the knowledge obtainable about that child. For this reason it is impossible to fix hard and fast limits for each test within which success in any particular occupation may be expected.

Four stages (*A-D*) may be distinguished in the process of arriving at a decision in this experiment.

### A. FIRST STAGE

Each child was first classified according to his level of general ability. The data available upon which to base this classification varied slightly from one group of children to another; but in all cases there was a score from a group intelligence test, and

<sup>1</sup> *A Study in Vocational Guidance*, pp. 81, 82.

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in nearly one third of these there was, in addition, a mental age obtained by the use of Professor Burt's revision of the Stanford-Binet Scale. This was employed in every case where there was reason to suppose that the result of the group test was in any way unreliable. If there was disagreement between these two measures the intelligence estimate was based on the result of the individual test, in preference to the group test. It was partly in order that the personal contacts of the individual examination might not be lost that a short series of tests (including the Vocabulary Test, the Ball-and-field Test, and the Memory for Digits Test), selected from the Stanford-Binet examination, was given in every case in which the complete individual examination was not employed.

The results of the performance tests (p. 76) were also taken into account in interpreting the above-mentioned tests. They were used as a check on the admitted weaknesses of the linguistic measures, for success in the linguistic tests is dependent on a minimum level of scholastic attainment in reading, and hence on school attendance, and also on vocabulary, which must vary both according to the cultural level of the home and according to the accessibility of, and interest in books. This minimum level of cultural attainment is assumed to be obtainable for all sections of the population educated in secondary schools; hence it has been said that special verbal ability does not influence the results of intelligence tests, except in cases where the level of scholastic attainment is such that reading and writing have not been completely mastered. But it was by no means possible to assume that such a mastery had been generally achieved in this group. Hence the composite performance test score was used as a means of discovering the existence of an exceptional handicap in respect of verbal processes. Where the performance test score was markedly higher than the linguistic test score it was interpreted to mean that the latter might be an underestimate of the child's real general ability; search was then made among the information in the total case-history to find possible reasons for the apparent lack of ability in verbal processes.

The general level of intelligence having been determined, it was then possible to place each child in a scheme of the occupations classified according to the level of intelligence required.

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Such a classification has already been published by Professor Burt,<sup>1</sup> covering the whole range of occupations. The range of intelligence test scores obtained in the present experiment was such that the bulk of the cases fell into Professor Burt's fifth class of occupations, described as "semi-skilled repetition work" (I.Q. 85-100). The complete range of scores extended over four classes, the uppermost being described as "clerical and highly skilled," the lowest as "unskilled labour."

### B. SECOND STAGE

The next step in the process of progressive elimination of all unsuitable occupations depended on a consideration of an aspect of the individual which combined both intellectual and temperamental qualities. According to the decision, the individual was most suited for work dealing primarily (a) with people, (b) with concrete things, or (c) with papers—that is, with books, writing, or figures. The determination of the class to which any child belonged was based on a consideration of the following factors:

- (1) The degree to which he possessed special verbal ability, as indicated by his score in the vocabulary tests, his school record, and his scores in the tests of scholastic ability.
- (2) The discrepancy, if any, between the composite performance test score and the other test scores from which intelligence was judged.
- (3) His score in special practical tests, such as those of mechanical ability, and his school record in hand-work.
- (4) Estimates of temperamental qualities based on observations and information obtained during the interview, the testing, and the home visit.
  - (a) Judgments of the degree of social ability were composite estimates derived from separate judgments of such characteristics as sociability, tenderness, leadership, co-operativeness, together with descriptions of manner and personal appearance.
  - (b) Judgments of certain other temperamental qualities, closely concerned with 'practical ability.'

<sup>1</sup> *A Study in Vocational Guidance*, p. 2.

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were based on estimates of such characteristics as calmness under pressure, attention to detail, persistence, industry, constructiveness, etc., and on information as to the extent to which leisure pursuits were concerned with constructive and practical activities.

(The 'practical ability' just scrutinized relates to an aspect of *temperament*; it must be distinguished from that hypothetical aspect of *intelligence* called 'practical' which the performance tests were designed to measure. Although there appears to be no such thing as a group factor<sup>1</sup> of practical intelligence in the sense of a cognitive factor, it is still possible that there is a group factor of a temperamental rather than of an intellectual nature. This factor may be concerned with the affective response to concrete tasks or to the need for action. Owing to lack of sufficiently delicate methods of scoring, it may be impossible to demonstrate its existence through statistical analysis of the quantitative measures of success in performance tests; yet it may be none the less manifested in the test situation. This manifestation may take the form of emotional behaviour, which may be recorded in terms such as 'tendency to make random or absurd movements,' or 'tendency to be distressed under pressure of speed.' It may also be recognized in verbal expressions of doubt, discouragement, and the feeling of insufficient ability.)

(c) The temperamental characteristics pointing to suitability for work with papers and books were often of a negative nature. Thus an individual lacking in social qualities, and liable to become confused in dealing with concrete tasks involving skilled manipulation, might be classified as most suited for linguistic work, provided that his scores in the linguistic tests were considered adequate.

<sup>1</sup> A specific factor which occurs in two or more different special abilities is called a group factor. If it occurs in all special abilities it is called a general factor.

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(Similarly, instances of selection on the basis of negative qualities occurred where a marked lack of social qualities was shown together with a very low score in linguistic tests, since these were sometimes taken as indications of suitability for practical work. The interpretation of the groupings of abilities and character traits here described was never rigidly adhered to. Thus, high ratings for qualities listed under the heading 'Practical Ability' would not necessarily by themselves indicate suitability for work with things. They might be combined with high scores in verbal ability and school attainments, in which case work with papers or books might be indicated, especially if there were low scores under the heading 'Social Ability'.)

It should be noted that the basis for this threefold classification was entirely empirical. It was not assumed that a correlation necessarily exists between the various criteria upon which the diagnosis, for example, of 'suitability for work with people' was based. Nevertheless, it is quite possible that some connexions of this kind do exist, since a child who is lacking in social qualities may compensate by greater interest in solitary hobbies, which may lead him to develop special abilities connected with concrete tasks.

### C. THIRD STAGE

The possibilities of employment having now been narrowed down to a group involving a certain level of intelligence, and from that group a sub-group having been selected according to the nature of the material mainly dealt with (people, things, or papers), the next stage required the consideration of more specific qualifications. Scores were available from the tests of manual dexterity, spelling, arithmetic, immediate visual memory, ability to manipulate relations of form, and (in the case of boys) mechanical ability.

In estimating the nature of the child's special abilities the separate scores in these tests were taken into account. Thus, the scores for the Dearborn Formboard and Cube-construction Tests were considered in relation to the Form Relations Test score: marked success in Picture-completion Test II was considered as having some bearing upon ability in social adjustment. In tests of manual dexterity a low score in the Nuts and Bolts Assembly Test was taken as a contra-indication for work



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involving assembly of small objects. It is clear, however, that these factors affecting the diagnosis of the child's abilities cannot become more precise until further research has determined the nature and extent of those mental factors which determine skill, not in a single highly specialized activity, but in a group of activities extending over a range showing wide superficial variety. In some cases, it is true, tests are available, but there is doubt as to the exact nature of the factors they measure; in others experiment has indicated the presence of a group factor, but convenient means for measuring it have yet to be devised. For example, social ability is included by Professor Spearman in his list of group factors; at the time of the experiment, however, no test had been established as a satisfactory measure of this factor, although, as has just been stated, Picture-completion Test II was regarded as relevant to this problem.<sup>1</sup> (Among a group of mentally deficient subjects success in this test correlated with ability in social adjustment rather than with age level.)

At this stage, too, special temperamental characteristics were taken into account. Thus a high rating for sociability was taken as an indication of suitability for work in a group, as opposed to work involving some degree of social isolation, such as domestic service. Similarly, a low rating for self-confidence was taken as contra-indicating work involving danger and quick decision (*e.g.*, motor-driving), or work involving persuasion of others (*e.g.*, salesmanship). Medical contra-indications further limited the choice of occupations, since these dealt with such conditions as dusty atmosphere, exposure, nervous strain. It was occasionally found that the medical contra-indications precluded all the occupations which on other grounds were considered suitable; in these cases a compromise had to be effected.

Another factor, though not entirely in the same category, was then taken into account—social background. For example, it was realized that a child might possess all the abilities required in a certain occupation and yet be unable to settle down happily in the work, because his social outlook was different from that of his fellow-workers.

<sup>1</sup> Doris Perry, "Interpretations of the Reactions of the Feeble-minded in the Healy Picture-completion Test II," *The Journal of Delinquency*, vol. viii, 1922.

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### D. FOURTH STAGE

Final selection from the remaining possibilities was made by taking into account certain practical considerations of an entirely different nature, such as the parent's wishes, the child's ambition, the possibilities of obtaining a vacancy in the occupation desired, and the rate of pay in that occupation in relation to the economic needs of the home.

In some cases it was possible to confirm the final choice by means of an appropriate selection test. These tests consisted of various series which had been devised for the selection of employees in special trades. They included tests for dress-makers, office-workers, engineers, and packers; and they had been standardized on groups of workers actually engaged in these occupations. It was thus possible to find out whether any child had reached a special standard required in a particular firm.

Although the description given above sets forth in logical order the several processes of arriving at a recommendation, in actual practice it was sometimes necessary to begin with the final process. For example, when a child had some definite vocational ambition, either based on interest or due to some such special opportunity as a vacancy in a parent's or a relative's business, this possibility was made the starting-point, and was considered in relation to each of the stages just described. In many cases, however, it would be eliminated at one stage or another, and thus the process of finding an alternative recommendation would proceed according to the ordinary system.

The outcome of this progressive elimination was expressed, for the first group of cases advised, in terms of specific occupations, one or two alternatives being usually given in order of suitability—for example, (a) cashier, (b) shop assistant in grocer's or dairy, (c) skilled factory work not involving near eye-work.

It was soon realized, however, that this method of wording the recommendation led to difficulties. First, a variety of psychologically different occupations might be included under the same name. With one firm fancy leather work might mean a simple routine task of fixing handles on to bags, and with another firm it might mean a skilled occupation in which each

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individual worker was trained in every branch of the processes. Secondly, the great variety of occupations available in the district rendered detailed information about each impossible. Hence if vacancies in the two or three occupations suggested were unobtainable owing to current labour conditions, there might be other equally suitable opportunities which would be missed simply because they were omitted in the recommendation.

Moreover, the officers of the Juvenile Employment Exchange possessed intimate knowledge of local conditions and individual variations among firms occupied in the same work—an unrecorded knowledge which was the result of accumulated experience in placement work. It was therefore considered advisable to devise some means whereby this expert knowledge could be related to the results of the psychological analysis.

The investigators decided therefore to summarize their recommendation in *general* terms, adding *specific* recommendations as examples in order that the juvenile employment officers might be able to contribute other examples on the basis of their greater knowledge of conditions in the district. Clearly even in this method there was scope for error, since the officers might meet with difficulty in interpreting the generalized description without some knowledge of psychology. At the time, however, it seemed to be the only way of bridging the gap between knowledge of the child in terms of psychological and physical capacities and knowledge of occupations in terms of varying local conditions. The following is typical of the form of recommendation thus obtained:

Work which requires good physique and general reliability, but not demanding high speed or much intelligence. The following suggestions might be worth considering: (a) warehouse work (starting as van-boy, etc.); (b) heavy machine work of a routine type, e.g., zinc-cutting with guillotine.

### E. THE VALUE OF THE METHOD

The adequacy of the information available and of the method used may now be considered in the light of the difficulties encountered and experience gained in dealing with the 600 cases. Its experimental justification will be considered later, on the basis of the follow-up results.

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### (a) Information about the Child

The vocational examination should consist in finding out only those things about the child which are related to success or failure in occupations. In the present state of knowledge, however, it is necessary to find out everything possible—everything that makes him a person as distinct from other people. This information is then translated into such terms as the progress of research in psychology will allow—that is, into terms of general and special abilities, temperamental qualities, scholastic attainments, social background, past history, and ambitions.

Experience showed, however, that these recorded items of information did not represent the whole result of the examination. There remained an all-important aspect, which, although not noted in the case record, played an essential part in any vocational decision; this aspect was the examiner's concept of the child's *personality as a whole*, as distinct from abstracted items of his abilities. Often this personal knowledge of the child was the deciding factor in the recommendation, when it was necessary to estimate the appropriate weighting to be given to conflicting considerations based on objective data, such as, for example, lack of agreement between the child's expressed ambitions and the occupational indications of the test scores. For this reason, when one is reading through the record book for a particular child, it is sometimes difficult to see the exact bases in the recorded data for the particular advice given.<sup>1</sup> That this fact reduces the objectivity of the method is undeniable. It serves, however, to emphasize the limitations of the purely objective method in the present stage of our knowledge, and to draw attention to the fact that in dealing with the whole human being in his natural environment, as distinct from his abstracted abilities viewed in the laboratory, personal impression is a factor which cannot be safely ignored.

A further point arises in connexion with the controversies concerning the interpretation of certain of the test scores. The fact that in the present state of research it is not possible to say exactly what certain of the tests measure by no means

<sup>1</sup> Further reference to this point is made in Chapter VII, where the difficulty of interpreting records again arises.

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invalidates their use. For there are two advantages to be obtained from the use of tests; first, there is a standardized situation, and, second, there is a quantitative means for recording response to that situation in terms which are related to future behaviour. When the latter means is not available the response must be recorded by means of personal judgment, as in the casual interview. The fact, however, that such a judgment is based on a standardized rather than on a haphazard situation seems sufficient justification for supposing that the judgment is likely to be more reliable, particularly since special attention can be directed to the refining of the judgment by practice and by specially prepared schedules.

### (b) Information about Occupations

Only a small part of the information about the child has as yet been definitely linked to the requirements of occupations. There is little use in multiplying information about conditions in various occupations if there is no sure knowledge as to how differences in these conditions affect the worker. Thus the study of occupations depends on progress in knowledge of the mind. It was the discovery of means for measuring general intelligence that led to a psychological classification of occupations. Similarly, it is impossible to make classifications according to the special abilities required until it is known whether each ability manifests itself solely in one specific type of task or in a variety of different ones. Further knowledge will also be needed not only as to the basic nature of abilities, but also with regard to individual differences in the effects of practice, interest, monotony, and fatigue upon ability.

### (c) The Recommendation

There are certain general characteristics of the process of arriving at a recommendation which should be emphasized. Clearly it is not, and cannot be a rigid method for the fitting of pegs into appropriate holes, for this metaphor assumes a lack of change which does not, in fact, apply either to the adolescent or to the demands of occupational life. It is necessary, for example, to fore-see how the child will change in the transition from school to industrial life, and how he will respond to an

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upheaval which makes great demands upon adaptability, even among those who do not leave school as early as fourteen.

It is necessary also to envisage the post in terms of its changing aspects: not only to consider the qualities demanded during the first few weeks, but to consider how the occupation will seem to the worker after ten years of experience. Will he be still carrying out the same movements for eight hours a day, and is he the sort of person who would not only prefer to be doing that, but would be alarmed and filled with incapacitating anxiety if put to work that was more exacting? Obviously such questions cannot be answered simply on the basis of an intelligence test score, or, in fact, on the basis of any score so far available. This is another reason for considering the individual as a whole, with each item of information seen in relation to the rest.

In certain cases no satisfactory recommendation could be formulated. This was to be expected, since there is no reason to suppose that the occupational world offers opportunities exactly suited to all kinds and combinations of human ability. Thus there were children not highly endowed as regards general ability, whose level of intelligence was such as to make it unlikely that they would succeed in any but the simplest routine manual work; yet their temperamental qualities were such as to make it seem impossible that they could ever settle down in work involving so little variety of interest. Others, again, usually also in the lower grades of intelligence, were so lacking in self-confidence that the tasks which they might be required to perform appeared to be less important than the persons under whom they might work. For the timid, under-fed fourteen-year-old, who has perhaps never struggled beyond Standard IV, and who has laboured under a growing sense of incompetency in school work, the most important aspect of a job is the personality of his immediate superior. Hence the disadvantage of recommending occupations in general terms, rather than in terms of particular openings in particular firms where the specific conditions are known. Such a procedure would involve a combination of the work of the vocational psychologist with that of the employment expert. This is probably less necessary when dealing with those who are alert enough to carry out a recommendation, but it is almost essential

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in the case of the maladjusted or backward. It would also obviate the difficulty of finding suitable terms for the verbal expression of the recommendation—a difficulty which was acutely experienced in this experiment, since advice in general terms approached dangerously near to faculty psychology, and advice in specific terms ignored the inconsistencies abounding in the industrial classification of occupations.

## CHAPTER V

### THE STUDY OF OCCUPATIONS

#### I. THE PROBLEM STATED

SYSTEMATIC and detailed as were the foregoing studies of individual boys and girls, the information so obtained would have been useless without some equally systematic study of the occupations they were likely to enter. To ensure that the guidance would have practical value it was necessary to find out :

- (1) What were the occupations of the district open to boys and girls of fourteen years of age.
- (2) What mental and physical qualities and what traits of temperament and character were likely to favour success in each of these.
- (3) How many openings were likely to occur in each occupation (although this was considered only in a general way).

Even before the examination of the children began every effort was made to obtain adequate and suitable information under these three heads. In the preliminary survey, before the actual location of the experiment was chosen, a general idea of the range of occupations available in several districts adjacent to the Institute had been obtained through the Juvenile Employment Officers. Further, in the earlier experiment (see p. 27) a list of the occupations actually entered by children leaving school had been compiled, together with the proportion of children entering each. Attention could therefore be now concentrated on the requirements, psychological and physical, of each occupation.

#### 2. THE COLLECTION OF INFORMATION

Information was collected from three main sources :

- (a) Personal visits to factories, warehouses, workshops, and offices, in the course of which the processes of manu-



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facture were closely observed and the abilities needed for each process were discussed with the manager or foreman. (Difficulties, however, arose: the terminology of the inquirers and that of their informants had little in common.)

- (b) Inquiries of Juvenile Employment Officers and study of handbooks and pamphlets prepared by the Board of Trade, the Ministry of Labour, local education authorities (*e.g.*, of Kent), and other bodies.
- (c) The industrial investigators of the Institute, whose work brought them into close contact with a variety of factory processes. From them, and especially from those engaged in problems of vocational selection, much useful information as to the abilities needed for certain types of work was gleaned.

### (a) Visits to Factories<sup>1</sup>

The usual procedure was to visit the different departments in turn, to note the sequence of operations and the nature of each, to watch the operatives at work, and to analyse the movements made, estimating the intelligence and skill needed for success and, wherever possible, discussing with the foreman the differences between good and poor workers. Any process of special interest or difficulty received close attention; whenever any doubt arose arrangements were made for a second visit to a particular task or process. After the visit the details were carefully written up and filed for subsequent analysis and comparative study.

Among the occupations studied in this way may be mentioned printing, bookbinding, and box-making; piano manufacture, furniture-making, woodworking, office equipment making, and picture-frame making; boot and shoemaking, tailoring, shirt- and collar-making; metal work (various) and scientific instrument making; tobacco manufacture, cigarette-making, confectionery and sweets (various) manufacture; manufacture of fancy leather goods, electric lamps, electric

<sup>1</sup> The opportunities for paying visits to workshops and factories, which were utilized during the winter of 1924-25 and subsequently, were provided partly by friends of the Institute and partly through the kindness of the secretary of the Juvenile Advisory Committee, who gave the investigators many valuable introductions to firms in the area.

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batteries, and matches ; optical glass making ; and laundry work. Offices and warehouses were also visited, and some insight was gained into the methods of dealing with incoming and outgoing goods, and their collection and distribution, from the point of view of both the retail and the wholesale distributor.

By the time the examination of children began the range of occupations observed was wide enough, and the number of processes examined was large enough, to encourage the investigators to attempt to discriminate between one occupation and another, and to say which of several possible openings would be most likely to give satisfaction and success to the child.

### (b) Abstracts of Published Information

Meanwhile a large number of printed pamphlets on occupations was being systematically searched for information about such factors as health and physique, scholastic attainments, special abilities, and the like. But the result was very small. There was plenty of detailed description of the work, of the processes, of the hours of labour, wages, methods of entry, prospects of promotion, and so on ; but there were few references to the abilities needed for success. Of course, information about hours and wages was valuable, but in view of the aim of the experiment it could not be regarded as sufficient. These matters, however, have already been fully discussed elsewhere.<sup>1</sup> Suffice it here to say that the investigators had to depend mainly upon the information gained during their personal visits, supplemented by statements about local conditions and particular occupations kindly supplied by the secretary of the Juvenile Advisory Committee.

### (c) Work of the Investigators

In general, then, the occupation analysis which proved most helpful to the investigators was that done by themselves. When proposals for a particular type of work were under consideration each had to estimate, by reference to examples of this work actually seen by him (or her), the principal abilities needed for success and the extent to which the child possessed them. By discussing these questions at round-table conferences the individual estimates tended to fuse into standard judgments of

<sup>1</sup> The Institute's report on *Occupation Analysis*.

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suitability derived from the common experience of the group of investigators; so that when, in the later stages of the experiment, the investigators worked independently their judgments continued to be based upon similar experiences.

### 3. CLASSIFICATION OF OCCUPATIONS AND PROCESSES

It was not until the amount of information collected had become fairly considerable that any attempt was made to classify occupations and processes. At first it looked as though such a classification would prove impossible. The psychological factors were not easy to discover, and one could not always feel sure that factors which appeared important were really so. Moreover, the order in which the processes were arranged in the factories visited was usually determined according to production, so that in one room there might be a sequence of operations possessing, from the psychologist's point of view, not a single feature in common. As the investigator's studies increased in number the variety of the processes studied increased correspondingly, until it seemed as though an effective psychological classification, if ever possible at all, would take years to produce.

This view is still largely true: many more occupations need to be accurately analysed from the psychologist's point of view before any really satisfactory classification can be made. But, of course, in practical work we must use the best instruments we have at hand, whether they are ideally perfect or not; and the practical work of guidance had necessarily to be carried on with the aid of such instruments as were available.

Throughout this process of attempted classification the aim was to discover, if possible, groups of occupations or processes which are so much alike that a person who possesses the ability to succeed in one member of a group may reasonably be expected to succeed in any other member of the same group. The broader groupings, such as "clerical work," "highly skilled trade," etc., are bound to include certain occupations and processes which are, at least in some respects, unlike the rest. The different temperamental requirements for success in different occupations, however similar objectively, have likewise to be taken into account.

The Institute's report on *Occupation Analysis* describes one

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line of approach to this problem, and explains how the information obtained from the study of different processes may be summarized in a way favourable to subsequent classification. The information so obtained falls under two heads—*general* and *special*.

### 4. GENERAL AND SPECIFIC DESCRIPTIONS OF A GIVEN OCCUPATION

In the initial *general* survey of the occupation attention is paid to the following points:

- (a) Nature of the work, materials handled, etc.
- (b) Subdivision of the work into departments and processes.
- (c) General conditions of entry and employment (seasonal, etc.).
- (d) Nature of previous training (general or special).
- (e) General conditions of the work from the health point of view.
- (f) General demands of the work on strength, endurance, etc.

The information is summarized on the form given opposite. It was intended that this general description should, as far as possible, deal with the occupation as a whole, reflecting the common features of the processes into which it might be subdivided.

The *special* characteristics of each of these processes were to be dealt with in supplementary descriptions, each process being taken separately. The form employed for this purpose is shown at p. 140. It provides for a statement of the special conditions of a piece of work which have a bearing, favourable or adverse, upon the worker's success and happiness. The requisite degrees of intelligence and of skill and the qualities of temperament and character, the training and experience to be possessed before entry or to be acquired afterward, were all to be described and, as far as possible, assessed in quantitative terms. This is obviously a most difficult thing to do; in the absence of tests the estimates of observers have to be accepted. The degree of intelligence required was assessed partly by reference to the foreman or forewoman, and partly by general observation of the

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type of worker employed and by the nature of their previous education, as shown by the standard reached; and their general environment. The skill required was similarly assessed, although here an endeavour was made to facilitate the comparison between similar movements (though the materials used might be very different) by using a notation to express the component parts of a complex movement or series of movements.<sup>1</sup> The desirable temperamental qualities were judged in much

### FORM FOR GENERAL DESCRIPTION OF OCCUPATIONS

OCCUPATION

METHOD OF ENTRY

QUALIFICATIONS

(a) Aptitudes

(b) Attainments

PROSPECTS

SPECIAL FEATURES OF THE OCCUPATION

GENERAL NOTES

the same way, through conversations with workers, foremen, and managers.

No very fine gradings could be here attempted: a scale of five points—ratings A, B, C, D, E—was found sufficient. An estimate of, say, C+ for intelligence needs to be interpreted broadly rather than narrowly, since the range of intellectual ability in any occupation is usually an extensive one. The estimate indicates the mean rather than the lower limit, so that, so far as intelligence alone is concerned, one might find the work successfully performed by persons of C—intelligence or

<sup>1</sup> See *Occupation Analysis*, pp. 16-19.

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even less. But in these cases one would tend to attribute their success to the possession of marked *special* abilities.

The relation between the separate processes and departments was shown by a schematic arrangement, in which the sequence of operations through the factory is set out. An example (in

FORM FOR SPECIAL DESCRIPTION OF OCCUPATIONS			
INDUSTRY	DEPARTMENT		
OCCUPATION OR PROCESS			
<i>Description</i>			
(a) <i>General</i>			
(b) <i>Psychological</i>			
Intelligence			
Manual skill			
Special abilities			
Mechanical	Form	Number	Artistic
Others			
Temperament			
Experience			
(c) <i>Physical</i>			
(d) <i>Prospects and entry</i>			
<i>Notes</i>			

bookbinding) is given in the Institute's report, *Occupation Analysis*.

The foregoing account, however, refers rather to what was aimed at than to what was actually achieved. Relatively few occupations had been studied in the detail necessary for such descriptive analyses by the time the work of examining and

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advising children came to an end. In formulating their advice the investigators, as already mentioned, drew upon their own observations and upon the pooling of experiences at their conferences. These observations and experiences tended to fall into definite groups. Thus certain types of woodwork and certain types of metal-work were grouped together as being similar in the main; qualities common to office-work, to salesmanship, and to work behind a shop-counter, as well as the differences which might cause a boy to be recommended for one but not for the others, were selected for consideration in particular cases; various factory processes in which manual dexterities seemed important were recalled and reviewed whenever a 'manual' occupation came under consideration.

In an experimental inquiry such as this, where almost every case presented a different problem, it was inevitable that the classification of occupations arrived at mentally by each investigator should be in some respects shadowy and indistinct, but clearness was aided by the use of the following rough classification, made on a psychological basis from the various combinations of intelligence, dexterity, etc., required:

- Unskilled labouring.
- Repetitive factory-work.
- Domestic service (girls and boys).
- Nursing (girls).
- Shop-work (various).
- Needlework.
- Skilled manual work (girls).
- Cabinet-making and musical instrument making.
- Engineering (various).
- Heavy constructional work (*e.g.*, building trades).
- Laundry.
- Printing.
- Office-work (various).

Briefly, the situation amounted to this: neither the psychological studies of young people on the one hand, nor the psychological studies of occupations on the other, were, as yet, very elaborate or very precise. The problem of advising could therefore follow no simple, rule-of-thumb procedure; and the lack of a highly scientific occupation analysis, though felt, was

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not more serious than the lack of an equally precise technique of child-study.

At the stage, then, at which this experiment was carried out all the instruments were in some degree inaccurate. But, as regards the future, occupation analysis must advance *pari passu* with improvement in the technique of examining. There are probably groups of occupations or processes so alike in their psychological 'make up' that one may describe them all by the one set of terms; and just as a 'profile' characteristic of the individual may be constructed from the results of a psychological study, so a corresponding 'profile' will be found for the occupation.



## CHAPTER VI

### THE STUDY OF AFTER CAREERS

#### I. THE NATURE OF THE WORK

THE most difficult stage of all came when the children had left school. To complete the investigation it was necessary to study their vocational success. For this purpose all the boys and girls were continuously 'followed up' until, as nearly as possible, July 1929. At this date the young people concerned had been employed (wholly or partly) during a period of not less than two and a half years, and not more than four years, as the following table shows:

TABLE XXIII

<i>Date of leaving School</i>	<i>Length of Industrial History</i>
July 1925 . . .	4 years
Christmas 1925 . . .	3 years 7 months
Easter 1926 . . .	3 years 4 months
July 1926 . . .	3 years
Christmas 1926 . . .	2 years 7 months

Throughout the period of this follow-up work systematic efforts were made to discover what the young person was doing, how he liked his work, and what his employer thought of his efficiency. Every change of employment was recorded, the length of tenure of each post and the reasons why it had been left being investigated.

The information obtained on these points was derived from

- (1) Employment exchange records of industrial history.
- (2) Letters from the boys and girls.
- (3) Visits to the homes.
- (4) Parties held in the schools.
- (5) Visits to the employers.

But before entering into a detailed explanation (pp. 153-175) of these methods and the relative advantages and disadvantages of each, we shall consider some of the difficulties encountered in all.

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### 2. DIFFICULTIES IN OBTAINING INFORMATION

The task of keeping in touch with boys and girls after they have left school, and of finding out where and at what they are working, seems, *prima facie*, simple enough. All, apparently, that needs doing is to see them or to write to them, and thus to obtain the name and address of their employer, a description of the kind of work they are doing, a definite statement as to how long they have been in each post, and perhaps how they like the work or, when a change has been made, what reasons they have had for leaving it.

The investigators began their follow-up work with some such sanguine hopes as these. They had visions of fairly orderly records, with chronological lists of the various posts held by each individual, exact length of tenure, child's satisfaction, employer's report, etc., all complete. Disillusionment soon followed.

On the other hand, they had foreseen the loss of a certain proportion of cases (from 25 per cent. to 33 per cent. was thought probable), owing to removal of the family or because of unwillingness to give the desired information. In practice they found that the former of these two difficulties was less than had been expected, and that the latter hardly existed at all. Even among those who did not reply to the investigators' letters the failure to do so appeared to be due to carelessness, indifference, lack of time, or misunderstanding of the purpose, rather than to any positive objection to giving the information. When visited in their homes or seen at parties, almost all responded willingly and to the best of their ability. The number lost through removal without leaving an address was only forty-five (7.2 per cent.) boys, including five who were known to have emigrated to Canada, Australia, or New Zealand, and sixty (10.3 per cent.) girls.

Thus the difficulties met with in the course of following up the careers were quite other than had been anticipated. Incompleteness of final records of industrial history was due not so much to entirely losing trace of a proportion of the juveniles as to obtaining only partial, unreliable, and often contradictory information about many of them. The causes will be described in the four following sections. But it should be remembered,

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in considering these difficulties, (i) that the district concerned was a poor one; (ii) that the average intelligence of the children concerned was somewhat below the average for the general population; and (iii) that the number of small businesses was large.

### (a) The Name and Address of the Employer

One difficulty in obtaining the name and address of the firm in which a young person was working—either from him (in interview or by correspondence) or from his mother at a home visit—arose from the fact that to many of these children addresses appeared to have little or no meaning. Their own address would, as a rule, be given glibly enough, having become familiar to them from frequent usage, and from the necessity to report it either at school or to the care committees or other authorities with whom they had frequently come in contact in the course of their school life; but the description of the whereabouts of their employment was often vague in the extreme.

Not infrequently the name of the firm was unknown, particularly when there were several firms in one building, the child having had no idea, even when he happened to have noticed the various names on the door, which belonged to the firm for whom he was working, and not even having known that there was any difference between them. Sometimes, after being informed on inquiry at the given firm that a child was not working there, the investigators were able to track him down by inquiry at other firms in the same building. Occasionally, too, the name of the firm given by the child was not that of his own (or of any other) firm, but the name of the foreman, supervisor, or worker at the next bench—which, after all, is a much more vital matter to the child. In one case, for example, the only name obtainable from the child when she was seen at a school party (see p. 169) was "Nellie." She knew nothing of the firm, nor of the street in which the workshop was situated, although she could find her way there; and as for names, all she knew was that the woman who had been made responsible for teaching her was known as Nellie to her fellow-workers.

Sometimes it was possible to trace firms either through the *Post Office Directory*, *Telephone Directory*, or *Buff Book*, or through previous knowledge of the local firms; but often insufficient information was given even for this, as in the case

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just mentioned. For instance, when one girl informed the investigators that she had at one time been working in a "Paint Facktry" in "Coken Street," and in another part of the same letter that she had been "painting shose" in "copenaten st," it was easy to identify the firm as one making coathangers and shoe-trees which had at one time been in Copenhagen Street, but had moved elsewhere some considerable time before the receipt of this information. When, however, the same girl, whose writing was unusually clear and legible, informed the investigators that "the last Frime" she had been at was "the MyFver Comey," at an address in which every word was incorrectly spelt, successful tracing became a little difficult. The address was quite possible to identify, in spite of the spelling, but she gave no number in the street, and nothing helpful was discoverable in the directories.

Where the name of the firm was more or less correctly given, but no address was added, or the street in which it was situated was known, but not the name, recourse to directories was often fruitful, especially if the nature of the firm's activities was correctly stated. But frequently the firm was described merely in terms of the particular process done by the child. Thus, nickel-platers might be described as polishers if the young person in question was engaged upon polishing; one firm was variously described as "sanitary engineers" and as "lead merchants"; and the proprietors of an ebonite factory might be called wireless-makers, because, among other things, the ebonite parts of wireless sets were made there.

The names and addresses of branches and departments were even more difficult to ascertain; and the name of the particular person from whom inquiry should be made—*e.g.*, of the staff manager, departmental manager, etc.—was frequently incorrect. Some children might give the address of the head office and the name of their own foreman, whereas it turned out that inquiry had to be made of the manager of the particular branch in which the child worked and a request to see the foreman could not be granted.

### (b) The Nature of the Work

The nature of the work actually being done by the child was at least as difficult, if not more difficult, to determine.

## THE STUDY OF AFTER CAREERS

Sometimes it was expressed merely in terms of an article made by the firm—possibly an article made in one department only, and a side-line at that. The child, though perhaps occupied in sweeping floors, washing dishes, and running errands, might nevertheless be described as doing “bag-making,” “confectionery,” etc. There might or might not be prospects of promotion to the actual work of the factory, or to some branch of it. This was frequently impossible to find out, for often the child did not know and might not have bothered so long as the wages came in regularly. Often the employer himself could not say, the prospects depending upon the momentary fluctuations of the labour market.

“Engineering,” “wireless work,” “leather-work,” etc., were frequently given as the work done by the child without further specification. “Engineering” at this stage meant, as a rule, some purely repetitive process—working a press, a drill, a lathe, etc.—and might be included in the recommendations under the heading of “Routine Factory-work.” Polishing, ebonite-turning or moulding, spring-making, weighing powders, assembling of various sorts, making spring mattresses, enamelling, and buffing have all at one time or another been designated by the children as “engineering.” “Cigarette-making” might mean packing or sealing or labelling tins, or merely running errands in the cigarette department of a tobacco company.

Even where some attempt was made by the child to differentiate between the process in which he was occupied and the work of the firm as a whole the investigators were often not much further forward. “Something in the tool line” was one mother’s description of her son’s work. “Working on the tubes” was the description of the work done by a girl in a thermometer factory. One boy informed the investigators that he was “printing” in a firm which was known to be manufacturers of foot appliances; it was afterward ascertained that he was fitting lights into electric signs in the advertising department of the firm. This department was known as the “printing department,” but the boy could hardly be said to be learning printing in the ordinary sense of the word. On another occasion this boy (still in the same post) was described as “tool-making.” “Painting trees” sounds an interesting and unusual occupation until it is realized that the firm in which this operation was conducted turned

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out shoe-trees and coathangers; the same job, as we have seen, was described as "painting shoes." "Pad floor" was given as the type of work done by one girl in a printing firm. The occupation of another girl, whose parents could only describe her employers, a firm of sponge merchants, as "contractors," was variously described as "sorting white stuff," "stringing and packing," and "railway trimmings," although no change in the work appeared to have taken place during her time with the firm. "Waiting on them specialists" in a hospital, as one father described his son's work, proved to be the office of the page-boy assisting the hall-porter.

These examples illustrate the investigators' difficulties in a district containing few large factories or workshops, but a large number of small, or even 'one-man,' firms engaged in an unusually wide variety of businesses. But patience, a knowledge of the alternatives, and diligence in hunting through directories, etc., and in checking letters against interviews with children and with employers, ultimately brought a fair degree of order out of chaos.

### (c) The Length of Tenure of Posts

The length of time during which posts were held was singularly difficult to ascertain. "A decent while" might mean anything from a week or two to a year or more. Contradictory information was often received on this point, a boy perhaps stating that he was with a certain firm six months, the employer declaring that the boy had left after a week, perhaps even furnishing the dates of starting and finishing. Weeks and months were frequently confused: a boy might report to the Employment Exchange that he was six weeks with a firm and tell the investigators later at a party that he had been with the firm six months. One girl, interviewed thirteen months after leaving school, said that she had had three posts, the first two of which she had held for six months each, and the last for thirteen months. Another declared sixteen months after leaving school that she had had six posts, which she had held for three weeks, two weeks, three weeks, two weeks, five weeks, and one week respectively—a total of sixteen weeks. She confessed to having been a week or two unemployed while waiting for one of the firms to send for her again; but no further questioning

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could extract from her a confession of other posts or more than a few weeks' unemployed time. She could not be made to understand that there was any more time to fill up than that for which she had accounted.

Often, too, when the records obtained from different sources, or from the same source at different times, were looked into, it was found that a boy or a girl had apparently been in two or even more posts at the same time. One boy, for instance, according to the information which he gave to the investigators at a party and to the Employment Exchange a few months later, appeared to have been in two posts at the same time practically ever since he left school, and for a considerable period in three posts. The particulars of this case are, perhaps, worth quoting in detail to illustrate the type of record with which the investigators had not infrequently to deal.

### *Boy No. 32 (left school end of July 1925)*

Placed by the Employment Exchange 14/7/25 in Firm No. 193 (presumably ready to start work when he left school at the end of the month). He reported to the Exchange that he was still there in September 1925, but on 20/10/25 the firm reported that he had left some time ago, and they could remember no details as to why or when.

On 25/10/27 the boy was seen at a party and informed us that he had been six months at Firm No. 193 (*cf.* above dates showing that he could not have been here more than two and a half months), and had then been another six months at Firm No. 393 (which appeared to be the same as an unknown firm at which the care committee visitor had reported him to be working on 16/11/26, but *cf.* dates above). He had left this firm because they did not give him a rise in pay. Since then he had been working at Firm No. 156, where he still was at the time of the party (25/10/27). Apparently, then, according to this information, even if he had been at the first firm six months (which he was not, according to the dates), he must have been at No. 156 for considerably over a year when he was seen at the party (*cf.*, however, date of care committee information).

Between the 17th and the 20th of December, 1927, *i.e.*, less than two months after the party, he applied at the Employment Exchange for work, when he informed them that, before being at Firm No. 156, he had been nine months at Firm No. 393, and had been dismissed because of slackness of trade (*cf.* length of time and reason for leaving given at the party), a year at Firm No. 1381 (of which no mention had been made at the party), and six months

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at Firm No. 945 (of which again no mention had been made at the party). He had left Firm No. 156 on 17/12/27 for higher pay, having been there six months (*i.e.*, apparently only since June 1927, four months before the party).

On 20/12/27 he was placed by the Exchange at Firm No. 1382, but kept this post only half a day, as he did not like it.

In April 1929 a letter was sent to the boy asking him what he had been doing since the date of the party, when he was with Firm No. 156. He informed us that he had left Firm No. 156 two years previously, *i.e.*, about April 1927 (six months before the date of the party!) and that he had been with them six months. Since then, according to the letter, he had been at Firm No. 393 for eight months (previous statements regarding this firm had been six and nine months respectively), and at another firm (presumably No. 1381, though given quite a different name from the one we already had on record) for ten months, and at No. 945 for nine months (previous statement to Exchange, six months). These were all given in response to the inquiry as to where he had been since No. 156, although he obviously misunderstood the inquiry, and endeavoured to give all posts since leaving school, omitting some, however.

His present post at Firm No. 1858 he had held, he said, for sixteen months when the reply was received.

If, therefore, the information in the letter had been taken at its face value it would have appeared that he had left Firm No. 156 two years ago, and had since held posts amounting in all to 3 years 7 months. If, on the other hand, the information as to past posts is taken (as is obviously intended) as referring to the time before he went to No. 156, then no account is given as to how the time was filled between leaving No. 156 (two years ago) and obtaining his present post sixteen months ago. The two years is, however, obviously incorrect; the truth being that he had left No. 156 on 17/12/27, as was previously notified, and had gone straight to his present employment, which, in that case, he would have held just sixteen months at the time of the letter. Previous information, however, still contains mysteries. On an attempt being made to visit the employer, Firm No. 1858, no such firm could be found at the address given.

Parts of another boy's record are perhaps worth quoting in detail also.

*Boy No. 548 (left school end of July 1926)*

Placed by the Exchange, 21/9/26, Firm 556. Left 29/10/26 because of slackness of trade.



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Placed by the Exchange, 1/11/26, Firm 373. Left 1/1/27 for better wages.

On a subsequent occasion the boy reported to the Exchange that he had been at this firm seven months, while when interviewed at a party he denied ever having been there at all.

Placed by the Exchange, 4/2/27, Firm 715. Left 19/2/27 for slackness of trade.

The boy informed us at a party that he had applied at this firm, but had not been engaged.

Placed by the Exchange, 25/2/27, Firm No. 815. On 4/4/27 the boy wrote to the Exchange reporting that he was still working here. On 24/5/27 the firm was visited and reported still employing the boy.

On applying at the Exchange in July 1927 the boy reported that he had left Firm No. 815 for more money after two weeks—*i.e.*, early in March—and that he had since been three and a half months at Firm No. 1362.

On being interviewed at a party in November 1927, he informed us that he had never been at Firm No. 815, but that he had applied at this firm and not been engaged.

Further information from the Exchange was as follows:

Placed by the Exchange 22/7/27, Firm No. 1363. Left 16/8/27.

Placed by the Exchange 26/8/27, Firm No. 691. Left 12/10/27.

Placed by the Exchange 28/10/27, Firm No. 1364. Left 4/11/27.

Placed himself 20/11/27, Firm No. 1321. Left after two weeks.

On 22/11/27 the boy, interviewed at a party, denied having been at any firm except 591, for six or seven months (of which the Exchange had no record, and for which there does not appear to have been time), 691, and 1321, his present firm.

These are exceptionally complicated instances, but they illustrate how carefully all the statements, even in straightforward cases, had to be checked.

### (d) The Reasons for leaving Posts

As might be expected, the reasons why the boys and girls had left their previous posts were difficult to ascertain correctly, different reasons being given on different occasions and by different people concerned. Moreover, the same statement appeared to mean different things on various occasions. Many posts were probably left for a combination of reasons, no one of which can really be considered the deciding factor.

The commonest reason given by both children and employers was "Slackness of trade." This, of course, always makes a

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convenient excuse, being a condition beyond the control of either employer or employee, and for which, therefore, no blame can be attached to anyone. It was probably a contributing factor in a great many cases. An employer may be dissatisfied with a worker—may find him slow, inefficient, rude, or idle; he may be hesitating whether to keep him on; or he may be keeping him on because he knows that, with the (then) existing shortage of juvenile labour, he may find difficulty in getting anyone else. In the former case temporary depression in trade will give him the chance that he has been waiting for. The boy's dismissal is put down as due to slackness of trade; yet the employer might have been willing to keep on a good worker through the slack period for the sake of having him ready when the busy time came again. Again, a boy may truthfully say that he left for "a better job" or for "more money," when what actually happened was that a boom in trade had induced one firm to offer—for the time being, at least—rather more wages than could be offered by the firm with which the boy was working, and the boy took the chance thus offered. "Slackness of trade" has, perhaps, as much to do with this as in the case in which the reason for leaving was recorded as such; but it appears as something quite different in the records.

"Low pay," a reason frequently given, has a variety of meanings. It may mean simply, as already suggested, that the boy left a slack firm for a busier one, which offered at the moment better conditions. Or it may mean that the boy was on piece-work and, owing to slackness of trade, was put on short time or kept without material for part of the day, and consequently could not earn his maximum. In either of these cases the reason might equally well be given as "Slackness of trade." "Low pay" may, on the other hand, mean that a boy or girl left a good trade, at which he was being paid the ordinary learners' rate, for a blind-alley job which, because of the lack of prospects, is better paid at the beginning. Or it may mean that the child was on piece-work and, being slow at the work, unable to earn much. The "low pay" here, of course, would be due to inefficiency on the part of the worker.

Naturally, a child seldom confesses to having been dismissed for misbehaviour, dishonesty, untruthfulness, etc. Such cases tend to appear both on the records of the Employment Ex-

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change and in the data obtained by the investigators direct from the child under a variety of headings, the cause of leaving being explained as "Slackness," "Wanted a better job," "Wanted more money," or "No prospects." The true reason in such cases was sometimes obtainable from the employer, but in the majority of cases the statement from the boy or girl had to be taken at its face-value without confirmation.

Here, too, the reason is likely to be a mixed one. If a boy is happy in his work he is less tempted to misbehaviour; if he finds his interest in his work he does not need to find it in less desirable ways; and if he is anxious to keep his work he will avoid doing anything which may lead to his dismissal. On the other hand, if he finds his work difficult or uninteresting he is likely to find relief in other channels; and if he does not care whether he keeps his work or not, and knows that he can always get another post, in which there was no difficulty among juveniles at the time of the experiment, he may do his best to annoy his employer, or, at least, not bother to please him.

"No prospects," "Low pay," and "Didn't like it" may be interchangeable expressions, the real reason being a combination of the three. A boy may put up with monotonous or uninteresting work if the prospects of getting on to something more congenial or more lucrative seem to him satisfactory; or he may stay with a firm where he is happy in spite of the fact that it is leading him nowhere. Only when two or more of such reasons are combined is he spurred on to take the drastic step of finding other work. Hence the reason given for leaving may reflect only a part of the truth and not the whole of it.

### 3. THE METHODS OF OBTAINING INFORMATION

#### (a) Employment Exchange Records

The officers of the Employment Exchange by whom the boys and girls were interviewed before they left school kindly agreed to assist the investigators in their follow-up work. It was arranged that the investigators should look through the records of the Exchange every month, and note full particulars of any of these boys and girls who had applied at the Exchange during the month, and especially of any who had been placed in employment by the Exchange during this period.

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As has been explained in a previous chapter (see p. 25), all boys and girls during the term prior to their leaving the elementary school are interviewed at school conferences and advised as to choice of career. Particulars of these children are recorded by the Juvenile Employment Officer, and those desiring further advice and assistance in obtaining suitable situations after leaving school are invited to attend the Juvenile Department of the Employment Exchange and to register as applicants for employment. It is understood that, on an average, between 50 and 60 per cent. of children actually register at an exchange on leaving the elementary schools, and of these about 60 per cent. are placed in their first situations by the exchange.

The investigators' records show that, of the total of 1200 children covered by the experiment, 32.3 per cent. of the boys and 27.9 per cent. of the girls were placed in their first positions by the Employment Exchange. Some of these changed their posts on their own initiative and without informing the exchange at the time. After doing so and possibly trying several places, and failing to find or retain work to their satisfaction, many returned to the Employment Exchange and registered again for employment. In addition, a number who did not seek the assistance of the exchange for their first situation registered later for help in obtaining a post. In all such cases the Juvenile Employment Officer elicited as far as possible full particulars of the situations previously held. This information was, perforce, obtained retrospectively, and as a rule only after the juvenile had left his post. It was therefore not possible to ensure a completely accurate record, nor to test the truth of the statements. From the investigators' point of view retrospective information was, of course, much less valuable than information received while the post was still held. It was not of much use to visit employers and to inquire of them about boys and girls who had left their service some time previously and the details of whose work they had often forgotten.

As is shown at pp. 233, 235, the average rate of turnover of employment among the group under investigation was very high, and it was inevitable, especially among those children showing the highest rate of turnover, that information as to the majority of posts held was not obtainable until after they had become

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past history. The information contained in the Employment Exchange records was not, except in those cases in which the placement had been effected by the exchange, sufficiently informative for the purposes of the investigation. On reaching the age of sixteen boys and girls in employment in most classes of occupations must become insured persons under the Unemployment Insurance Acts (1920-1930), and for this purpose must apply at an Employment Exchange for their unemployment insurance cards. The form as completed on these occasions by those boys and girls who happened to apply at the particular exchange concerned in the experiment served as a confirmation of previous information, or as an indication that a change of occupation had occurred and that further inquiry should be made, rather than as a definite source of information.

The exchange records in the majority of cases gave little detailed information of the boy's liking for his work. Only in those cases where the reason for leaving a post was recorded as "Didn't like it" was any expression as to his liking for it made; nor in such cases was it clear whether the "Didn't like it" referred to the kind of work in general, to the particular firm which had employed him, or to some special conditions in that firm.

The information from this source being obtained by the investigators only from written records at the end of the month during which the child had applied at the exchange, no further elucidation of the information on the record card could be obtained. The inadequacy of such expressions as "Slackness of trade" and "Not enough money" has already been revealed.

On the other hand, information obtained from these records was in some ways more precise and accurate than that obtainable from other sources. Where the exchange had itself placed a boy or a girl in work the exact date of placement could be ascertained; and at times, too, the exact date of leaving a firm was available, although, since it was not automatically registered at the exchange, this information was generally less reliable.

It might happen that a child was engaged by a certain firm and that the exchange was notified to this effect, but that when the day to start work actually came the child failed to appear, having obtained work elsewhere in the interval. Often no notice

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of this failure was received by the exchange, which was left to believe that the child was in the place found for him, until a visit was paid to the employer or until the child responded to an invitation to the supervisory 'open evening.'

It was possible for the investigators to obtain more accurate information from this source regarding the name and address of the employer than it often was from the vague descriptions of the boys and girls themselves; and less time was spent among directories after receiving information from the exchange than after receiving it from other sources.

On the whole, then, information, where it was obtainable at all, apart from that concerning the child's own liking for particular work, could be considered as most accurate when obtained from this source. Complete information regarding all the posts held since the time of leaving school was received from this source in the case of only 18.3 per cent. of the boys and 11.1 per cent. of the girls. In the case of 44.6 per cent. of the boys and 54.4 per cent. of the girls the investigators had no information from this source at all. Of the remaining 36.7 per cent. of the boys and 34.6 per cent. of the girls information covering only a very short period of industrial life and a very small proportion of all the posts held was obtained from this source. It was therefore necessary to adopt other means of keeping in touch. This was realized at a very early stage.

### (b) Letters to the Boys and Girls

The method of writing to the boys and girls and sending them a short and simple *questionnaire* was tried in the early days of the follow-up work, when inquiry was made only into the work held at the time. This enabled the investigators to get into touch with the employers and to learn something of each child's efficiency in his job. It did not, however, provide information about any past posts held by him. It was therefore necessary to resort to other means of ascertaining this. About 50 per cent. replied to the first batch of letters, which were sent to all those who had left school from six to fifteen months previously and about whom no information had been received.

After a series of school parties had been held (see p. 169) in all the schools where it was possible to organize them, and a promise extracted from the boys and girls that they would

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reply to letters on future occasions, further *questionnaires* were devised—one for use in cases where the boy or girl had been seen at a party (and a reminder given of the promise to reply), and another for use in cases where he had been absent from the party, or had attended a school in which no party had been given. In the latter case the questions asked had to be of a more general character, since the information already available was very varied in amount—sometimes none at all had been received. Copies of the three forms used will be found below.

### LETTER SENT BEFORE PARTIES

FORM 1. 193...

DEAR.....

We should like to know whether you have obtained work and how you are getting on since you left school. We should be very glad if you would fill in and post this form.

Yours faithfully,

.....

ARE YOU IN WORK NOW? (Write "Yes" or "No")....

NAME AND ADDRESS OF EMPLOYER. ....

WHAT KIND OF WORK DO YOU DO? .....

HOW ARE YOU GETTING ON?.....

(Your Signature) .. (Date).....

N.B.—If you want any advice about your work call any Wednesday evening between 5.30 and 8 P.M. at the Finsbury and Holborn Juvenile Employment Exchange, 207A Pentonville Road. The entrance is by the first door coming from King's Cross, and the Committee Room is on the first floor.

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LETTER SENT TO CHILDREN WHO HAD  
BEEN SEEN AT A PARTY

No. ....

.....School

Date.....

DEAR.....

You will remember that when we saw you at a party at the School on..... you promised to reply to a letter asking how you are getting on. We shall be very glad now to hear, and shall be grateful if you will please answer the questions on the next page. When you have written the answers please refold the letter and post it back to us.

Wishing you every success,  
I am, yours faithfully,

A. IF YOU ARE STILL WORKING FOR<sup>1</sup>.....

1. *WHAT SORT OF WORK ARE YOU NOW DOING FOR THEM?* .....
2. *HAVE YOU HAD ANY PROMOTIONS?* .....
3. *WHAT ARE THEY?* .....
4. *HOW ARE YOU GETTING ON WITH YOUR WORK?* .....

B. IF YOU HAVE LEFT THIS FIRM please answer the following questions:

5. (a) *WHEN DID YOU LEAVE THEM?* .....
- (b) *ABOUT HOW LONG WERE YOU WITH THEM BEFORE LEAVING?* .....

<sup>1</sup> This was completed at the Institute before dispatch, with the name of the firm in whose employ the boy or girl was known to have been when last heard of; or with the name of an earlier firm if later information was very incomplete and indicated intervals for which no information was on hand.



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6. *WHY DID YOU LEAVE THEM?*  
7. *FOR WHOM HAVE YOU WORKED SINCE?* (Give the names and addresses of all firms, what sort of work you did for them, why you left, and, as nearly as you can, how long you were with them.)

### C. NAME AND ADDRESS OF PRESENT EMPLOYER.

8. *HOW LONG HAVE YOU BEEN WITH YOUR PRESENT FIRM?*  
9. *WHAT KIND OF WORK ARE YOU ON JUST NOW?*  
10. *DO YOU LIKE THIS WORK?*  
11. *WILL IT LEAD ON TO WHAT YOU WANT?*

Your Signature.

Your own Address.

LETTER SENT TO CHILDREN WHO HAD NOT BEEN  
SEEN AT A PARTY AND TO CHILDREN FROM SCHOOLS  
AT WHICH PARTIES WERE NOT HELD

No.

School

Date.

DEAR,

We are anxious to know how you are getting on since we last heard about you, and shall be very grateful if you will please let

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us know the answers to the questions on the next page. When you have written the answers please refold the letter and post it back to us.

Wishing you every success,  
I am, yours faithfully,

### 1. FOR WHOM HAVE YOU BEEN WORKING SINCE<sup>1</sup>.....

(If you have had several employers since then, please give the names and addresses of them all, what sort of work you did for them, why you left, and, as nearly as you can, how long you were with them.)

### 2. FOR WHOM ARE YOU WORKING NOW? (Give name and address of present employer.)

### 3. HOW LONG HAVE YOU BEEN WITH THEM?.....

### 4. WHAT KIND OF WORK ARE YOU ON JUST NOW?.....

### 5. DO YOU LIKE THIS WORK?.....

### 6. WILL IT LEAD TO WHAT YOU WANT?.....

Your Signature.....

Your own Address.....

<sup>1</sup> This was completed at the Institute before dispatch, the conclusion of the question varying according to the information already on hand.

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This method of following up had, of course, the great advantage of economy of time. Letters were prepared for a whole school at a time, and, in most cases, sent out, by courtesy of the head teacher, by hand through younger brothers or sisters or through neighbouring children still in school. Replies were sent back to the school and collected in mass. The chief disadvantage of this method was the impossibility of asking for further elucidation of points which the child had left vague. Moreover, it was not possible, in a printed letter devised for general use, to ask for explanations of any contradictions and incompatible statements received on previous occasions. An attempt was made to remedy this by going back, in the demand for information, to a time before such gaps or contradictions occurred. The firm given under section A of the party letter, for instance, was not necessarily the last firm which the investigators had heard of; they often went back to earlier posts, hoping in this way to get gaps filled up, or to obtain confirmation of one or other of the stories already received. Sometimes these tactics were successful, but often they made confusion worse confounded.

Such detailed inquiries as "What is the address of the head office?" "What branch are you in?" "What department are you in?" "What is your number in the firm?" "What is the name of your supervisor?" "Who engages you?" (e.g., staff manager, departmental manager, etc.), and even more detailed questions referring to particular firms only, would thus have been useless in a general *questionnaire* sent to a group of children, a large proportion of whom were employed in one-man businesses, carried on in a small shop or in the front parlour of a private house, or by little local firms in which not half a dozen employees were engaged, and in which any reference to departments, etc., would have appeared ludicrous. Where the recipient of the letter felt himself bound, as so many of the children did, to answer all questions, however inapplicable they were to his own particular case, such questions could have caused nothing but confusion in his mind. The investigator, therefore, had often to spend considerable time subsequently in trying to trace the individual, or in obtaining more detailed information from him than the *questionnaire* contained, before the firm was visited.

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One great advantage of this system over other methods of forming personal contact was that the young person had time to find out the name of his firm if he did not already know it, and such responses as "I'm working at the same place as me bruvver," without the possibility of further elucidation, were much less likely to occur than when the question was hurled at him in an interview and required an immediate answer. And the written name, however shaky the spelling, was often easier to fathom than the Cockney spoken word.

This, however, was not always so. We all know the difficulty of filling up forms; and for boys and girls to whom the printed word is much less familiar than it is to many of us, and whose own language is considerably different from that used on the forms they were sent, the difficulty is much intensified. Although it was believed that the forms had been made as simple as possible, and although certainly a great many desired questions had been omitted for fear of perplexing over-much, they were sometimes completely beyond the children's powers of interpretation. Sometimes they discarded the *questionnaire* altogether, and wrote in their own words on the blank page opposite, omitting most of the information really wanted. Often when they attempted to complete the *questionnaire* it was difficult to discover for which question which answer was intended. The same firm, for instance, was often given under the heading of both past and present employers (including sometimes the reason for leaving), the length of tenure being, perhaps, different in the two places. Sometimes section A of the party letter was completed in detail even though the firm referred to had been left, and it was quite uncertain whether the answers referred to the conditions which had existed in that employment or to those which did exist in the present employment.

A reply from one girl, for example, read as follows:

1. *For whom have you been working since you left school?*  
Mrs X. 18 alder Street.  
(If you have had several, etc.)  
Mrs X. 18 Elder street.
2. *For whom are you working now? (Give name and address of present employer.)*  
Y. Distillery Terrace  
2 weeks

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3. *How long have you been with them ?*  
12 months.
4. *What kind of work are you on just now ?*  
Housework.

[Note. Firm Y was a large biscuit factory ; Mrs X. was a private individual employing domestic help.]

A boy's reply read as follows :

- A. *If you are still working for A.P.* [a firm which employed his father and for which he was known to have worked for some considerable time after leaving school].

I am not working for A.P. now [inserted before the end of the question].

1. *What sort of work are you now doing for them ?*  
None.
  2. *Have you had any promotions ?*  
No.
  3. *What are they ?*  
Builders Joiners.
  4. *How are you getting on with your work ?*  
Bad.
- B. *If you have left this firm please answer the following questions :*
5. (a) *When did you leave them ?*  
7/1/29.  
(b) *About how long were you with them before leaving ?*  
11 months.
  6. *Why did you leave them ?*  
Slack.
  7. *For whom have you worked since ? (Give the name, etc.)*  
I worked for a chap name Tom Le-mans and he fell slack and left me out of work. He worked for C.D. 100 R. .... St. Same work.
- C. *Name and address of present employer.*  
[Here followed the name of his father and his own home address, the father being known to work for A.P., referred to above, whom the boy said he had left.]
8. *How long have you been with your present firm ?*  
11 months.
  9. *What kind of work are you on just now ?*  
None.
  10. *Do you like this work ?*  
Yes.
  11. *Will it lead to what you want ?*  
Yes.

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Another boy having replied to the first question of the non-party letter with the name "L & C" and the "adress," as he called it, of this firm, and the kind of work "I done for them," went on, in reply to Question 2 ("For whom are you working now? Give name and address of present employer"):

Left for teller a Lier H.... 90 M.... St.

In reply to Question 3 he said that he had been with this firm eleven months, while to Question 4 he said he had no work.

It was not very clear as to which of the two firms he had left for "teller a Lier," nor whether he had been dismissed for telling a lie or for rudeness in calling somebody a liar. Nor was the employer at all enlightening upon the subject when visited; he reported that the boy had left of his own accord because he got a job elsewhere with better money.

The kind of work done by the individual was also very vaguely stated, although sometimes it threw further light upon a situation which had been vague or incorrectly stated before. In the case of one boy, whose work, when he was interviewed at a party, had been recorded as polishing, the letter disclosed that he was a porter, not a polisher, the error no doubt having arisen through careless pronunciation. The investigators had been vainly trying for some time to trace the boy as a polisher in various departments of the firm, situated in different streets. Much unlooked-for expenditure of time was often involved in this way through incomplete or inaccurate information leading to fruitless search for reports among employers. Where previous information had been obtained from the mother at a home visit further enlightenment as to the type of work was frequently obtained from letters.

At other times the letter proved a much less successful method of ascertaining the kind of work than a personal interview. Had the investigators been able to see the girl who reported by letter that she was doing 'hotel' work at a chemist's, they would probably have got a more detailed description of the work. Small scraps of information regarding the kind of occupation had to be accepted in the hope of picking up further details later from the worker himself or from the employer.

The question regarding promotions seldom produced the desired response; it was often taken to refer not to the previous

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question ("Have you had any promotions?"), but to the name of the firm inserted by the Institute at the top of the page, and elicited such replies as "engineers," "leather goods makers," etc.

Section B of the party letter was often filled with a complete list of all employers since leaving school, or with a medley containing a partial list only, but with no distinction between those held before and those held after the post referred to in section A. The chronological order of posts becomes very vague in a child's mind when the total list is beyond a certain length. Considerable shuffling and re-sorting of earlier and newly received information was necessary before anything like a consecutive picture of the child's industrial career could be obtained. Sometimes the letter filled in gaps of time previously left empty, but seldom without creating further difficulties in the form of overlapping of time and details incompatible with what was already known.

The questions with regard to the child's liking for his work and satisfaction with his prospects were comparatively straightforward, and usually produced the direct answer—"Yes" or "No." There were a few exceptions: one bright youngster would not commit himself, and answered "Yes and no" to both questions; another, perhaps the only one of the 1200 who really hit the nail on the head, replied, "One has moods." In one or two cases the questions were answered about posts which had not yet been begun, but which were to be entered upon in the near future.

On the whole, letters were a satisfactory method (in the case of the 50 per cent. or so who replied) of obtaining the name and address of employers, and less time was wasted among directories after receipt of a batch of letters than after other efforts, except those through the Employment Exchange records, to obtain information. In regard to other details wanted—length of tenure of posts, reasons for leaving, satisfaction, etc.—they gave, on the whole, much less reliable and less detailed information than a personal interview.

### (c) Visits to the Homes

Among the methods of keeping in touch with the boys and girls which were used in the early days of the experiment, though almost abandoned later owing to the inherent difficulties,

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was the paying of visits to their homes. This method, however, was again resorted to during May and June 1929 to obtain information about children knowledge of whom was very inadequate or out-of-date.

The home visits had the advantage of allowing fuller inquiries to be made, and particulars secured on previous occasions (*e.g.*, at parties) to be verified. As in the other types of follow-up work, a great deal of valuable information was obtainable about where the boys and girls were working, but many pitfalls awaited the unwary inquirer, and several times the information received from home visits was definitely proved to be inaccurate or misleading.

Home visiting was the most extravagant method of keeping in touch with the children, involving, as it did, a day's work in the actual visiting of each twenty homes or so, and a proportionate amount of time in the preparation of data for visiting and in the entering of the results. After a not very successful attempt to employ it in the early days of the follow-up it was used only when other sources of information had failed.

Its chief disadvantage was the fact that almost all the information was obtained at second-hand, often in the presence of interested neighbours and in an informal way, which precluded any attempt at writing up on the spot. The experiment of paying evening visits was tried in the hope of finding the boys or girls at home, but too often they were out. The inquirers also found that the natural difficulties of visiting in the crowded area in which most of the homes lay were intensified in the evenings, and that the children were more apt to be resentful and unwilling to give information than were their parents.

Only once or twice was the inquiry resented by the parents and information refused; but it was not infrequently found that, although the explanation, or a suitably simplified explanation, of the reasons for the inquiry was accepted, the information given was minimal in amount and very incomplete.

In many cases the parents knew only vaguely what the boys or girls were doing. One mother, for example, told the inquirer that Johnny was "Dipping at a Jew's round the corner." From information received later from the boy himself it appeared that at the time of the inquiry he must have been either at a bedstead-maker's or at an antique-dealer's as a packer.



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Often the mother's information was definitely wrong, sometimes deliberately, sometimes through lack of knowledge of the child's movements. Her statements about the child's liking for his job had also to be taken with a very large grain of salt. Often she was anxious to please the visitor, imagining that a favourable report was wanted.

Another difficulty was the garrulity of some of the parents. Instead of hearing how Rosy was getting on and what she was doing, for example, one was confronted with the whole family history, with snippets about Rosy mixed indiscriminately with details of the job her elder sister had before she got married and a full description of the wedding and the new stair-carpet that had been laid in honour of the occasion.

Then there were parents with a grievance—against the wilfulness of the modern son or daughter, against employers in general, against the system of education, or merely against life—which made it almost impossible to get any information of value as to the whereabouts of the boys and girls and their satisfaction with their jobs.

The difficulties were still greater when one made inquiries about previous posts. To expect a mother with a family of half a dozen to remember what one member was doing some months ago is to carry optimism to an extreme.

An interview, 'composite' but typical of many that took place in this poor district, may serve to show a few of the difficulties, and will certainly give a better idea of the general atmosphere of the Institute's home visiting than pages of discussion of isolated points.

One would set off, full of hope and armed with an inexhaustible supply of tact, a list of names, and a map of the district. With the help of the police one usually succeeded in tracking down the street or block of buildings. But even when the street or building had been discovered there were the problems of removal to cope with. In one case the 'court' was in process of being demolished—"that same Pump Court 'immoralized' by Dickens," as a constable proudly pointed out. There were cases where repeated visits failed to find anyone at home, but, as a rule, some information was forthcoming.

Having identified street and number, one would give a resounding knock on the door and wait. After some moments a subdued shuffling would announce the presence of life in the house, and the door would open, often to show the figure of a small boy or girl.

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"Does Mrs Harris live here?" one would ask.

"Missus 'Arris, miss? I'll see."

Another wait.

"Please, miss, Mum says, 'Are you election?'"

Having explained that one had nothing to do with the General Election about to take place, one would wait again until at last Mrs Harris would appear. But meantime windows were being pushed up, and heads were appearing, neighbours were strolling to their doorways, and the inevitable floating population of small children was gathering round. Something like the following dialogue would take place.

"Mrs Harris?"

She would eye one with suspicious air and admit her identity grudgingly. Then would follow a brief explanation of why the visit was being paid, ending with a request for information about her son Herbert's work since leaving Blank and Co.

"'Erb, miss? But 'Erb's nearly eighteen! Wot do you want to know abaht 'Erb for? Now, if it was Lily—'er that's just left school, only three months, miss, and 'as 'ad seven jobs and don't seem hable to settle dahn no'ow, miss—but 'Erb! As steady a boy, thank Gawd, as you could meet, and brings 'is wages 'ome reg'lar. Me 'usband, Mr 'Arris, 'e always sez . . ."

At the first pause for breath one would break in, "Of course, Mrs Harris, I know that Herbert is a good boy and a good son to you. We've been trying to keep in touch with him ever since he left school, for, of course, it wouldn't be much use just to consider the jobs the children get as soon as they leave school."

"I see." By this time Mrs Harris would have thawed completely and be prepared for a good gossip. "Well, dearie, when 'Erbert left school the 'eadmaster—and a lovely gentleman 'e was, too—'e got 'im a job in a wireless place, but 'Erb couldn't stand it, and 'e left after three days. Why, miss, 'e 'ad to sweep the floor and get the men's tea, and 'e was *that* bossed abaht. So 'e came 'ome, and 'e sez, 'Mum,' 'e sez, 'I'm leaving.' 'Orright, me boy,' I sez. And after that 'e 'ad two or three jobs, and then 'e got in wiv Blank. And 'e was there till larst year. 'E 'ad a quarrel wiv one of 'is mates, and 'e left."

"Was he out of work at all?"

"No, duckie; 'Erb's never been wot you might say hout. Now, there's 'is brother, Tommy. Come to a bad end, that boy will—'e's always out o' work, never seems hable to keep 'is job, 'e don't. Why, 'e's 'ad three months this year, and not a penny coming in, miss. But now 'e's got a job on the railway, along wiv me brother 'oo's been a porter this ten year."

"But what is Herbert doing now?"

"'E got in wiv a pal at a place near 'Olborn."

"What kind of a place?"

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"Lawks, dearie, 'ow should I know? 'E don't tell 'is old mother nothink."

"But have you no idea what kind of work it is?"

"It's terrible 'eavy work, for 'e comes 'ome sweating somethink awful."

"And how does he like it?"

"'E don't complain, miss. 'E never were one to complain. I've seen 'im in 'orrible agony wiv toothache, and never a word of complaint."

"I see. And is this the only job he's had since he left Blank's?"

"So far's I know, dearie, but 'e don't say much. Would you like to see 'is photo, miss?"

And the interview would close with tactfully expressed admiration of 'Erb's photo. The next thing would be to find a quiet spot in which to make one's notes—a difficult matter in that district—and, having done so, to proceed to the next home to be visited.

But, despite the difficulties of visiting the homes of the boys and girls, their industrial whereabouts was determined with a fair degree of accuracy in some 50 per cent. of the cases visited. In about 30 per cent. of the cases the information was too vague to be of much use, and in about 20 per cent. of cases it was impossible to get any information at all. Almost none of the statements about liking for work made by the parents could, however, be taken as expressing the children's own feelings. As a means of follow-up, then, home visiting was moderately successful.

### (d) Parties in the Schools

In the schools in which it was possible to organize them evening parties were found to be the most satisfactory method of keeping in touch with the boys and girls themselves. With the kind co-operation of the school staff and the Care Committees, it was found possible to organize such parties in ten of the sixteen schools participating in the experiment. While the school staff, assisted by any members of the care committee present, were organizing games, competitions, musical items, or dancing, volunteers from the Institute staff or their friends took each guest aside for a few minutes and inquired into his industrial career. It was found that the young people were much more ready to talk on these occasions than when interviewed on their own doorsteps, the interviewer being

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looked on more as a friend and good fellow than as an official of the education authorities. Moreover, in this way one avoided the curiosity of friends and neighbours assembled on the doorsteps (one of the most difficult features of home visiting); and it was possible to take down notes in the child's presence without introducing the feeling of formality and giving the impression of interference which such an action does give when done in his own home. A comparatively prolonged and informal conversation could be carried on, in the course of which the desired information could be ascertained fairly easily.

The usual difficulties were, of course, met with here as in other methods—the children's inability to give the address of their employers, to describe the kind of work they were doing, etc. But it was easier by this method than by any other to obtain indirect information sufficient to identify the firm from previous knowledge or from landmarks of service in the use of directories. More especially was this so where the interviewer had a personal knowledge of the district and the characteristics of the individual firms. As pointed out already, the exact information required varied so considerably with the particular firm that it was impossible to ensure that all interviewers (some of them volunteers for the occasion only, and strangers to the district) were conversant with the requirements in each individual case.

The children's expressions of satisfaction or discontent with their work given at the school parties also were probably more reliable than statements regarding this obtained from any other source. A general atmosphere of friendship and good-fellowship prevailed; tongues were loosened by the social function, games, and competitions; and talk became more spontaneous and natural than during home visiting.

Attendance at these parties varied from school to school, ranging from 52 per cent. to 91 per cent. of the number invited, the average being between 60 and 70 per cent.

The parties, numbering eighteen in all, were all held during 1927, and over 700 boys and girls were interviewed at them. On these occasions the interviewer inquired as to the young person's willingness to reply to future letters, in the hope that this would increase the number of replies hitherto obtained—vainly, as it proved: the number of replies to letters tended

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to decrease slightly, although willingness to reply was expressed in all but two cases.

Although this method was found to give the fullest and most valuable results, it was, of course, necessary to follow up the careers of the children after the date of the party. For those who remained in the same post this could be done through the employers, but for those who changed their work the methods of letters and home visits had to be resorted to once more.

In many cases where boys or girls failed to be present at the parties the head teachers were able to obtain information for the investigators later from younger children of the family or sometimes from neighbours. Sometimes, too, members of the care committee kindly helped by visiting the homes of those who had failed to attend the parties.

### (e) Visits to the Employers

The whereabouts of the children having been ascertained by any one or more of the foregoing methods, it became necessary to obtain from their employers a report of their efficiency in their work, in order eventually to decide whether or not those who had entered work judged to be suitable for them were giving greater satisfaction to their employers than those who had entered occupations judged to be less suitable. With the kind co-operation of the Employment Exchanges in all the districts in which the children concerned had managed to find work, such reports were, as a rule, obtainable. In those cases in which the exchange had itself arranged a placement one of its officers called on the employer about three months afterward, in the normal course of the work of the exchange, to inquire if the young person were still employed and making satisfactory progress. Apart from its own placements, the exchange was already in touch with a large number of the employers of the district. It was also desirous of getting in touch with any employers still unknown, from whom suitable situations for its applicants might be obtainable.

It seemed unnecessary for two separate bodies to visit the employers of the district independently, perhaps both happening to call on the same day or within a very brief period. The Employment Exchange kindly consented, therefore, even where it had not itself arranged the placement, to obtain employers'

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reports on all the cases in which the Institute was interested. In order to secure that the information obtained at these visits was, as nearly as could be, that required by the Institute, arrangements were made, wherever possible, for a member of the Institute's staff to accompany the exchange officer on these visits.

Owing to the frequency with which many of the children changed their work, the majority of employers had of necessity to be left unvisited. When it is realized that about 33 per cent. of the total number of posts were held for less than three months, and that at times the length of tenure was as short as two hours, it will be understood that it was quite impossible even to hear about most of the posts until they were already past history, and that it was therefore impossible to visit the employers. It would have been sheer waste of time to call at a firm where a boy had worked for, say, one week six months before.

Even if a post was actually heard of immediately after the child had started in it it was not much use to make an inquiry of the firm until he had had time to become adjusted to the work and until the employer had had time to judge his efficiency. No inquiry was therefore made until three months after the child was known to have started; but by the end of this time he was often known to have left this firm and moved elsewhere, and so no inquiry of the first firm could be made.

Nor was it always possible to ensure in practice that every firm was visited within three months of engaging one of the children, even when information of the placement was received within this time. In order to obtain as much co-operation as possible from the employers, the investigators were careful not to bother them too often; it is the exchange custom not to call at any one firm twice within three months. The investigators had, therefore, to wait to allow this interval between visits to elapse, even when the boy had already been there long enough for inquiry to be made.

One might, for instance, visit an employer (let us call him Dash and Co.) to inquire about Tommy Jones and receive a report on his work. The next week, perhaps, a school party would be held in one of the schools, or a batch of completed

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*questionnaires* be received, from which it would be ascertained that Bobby Smith had left two days after the latest inquiry the post he was in when he was last heard of, and had since been working for Dash and Co., having already been there nearly twelve months. Since the investigators had already visited this firm quite recently about Tommy Jones, they would have to allow a period of three months to elapse before calling again to make inquiry about Bobby Smith. At the end of this period they would take out Dash and Co.'s card as that of a firm to be visited as soon as the opportunity arose. But Dash and Co. carried on business, perhaps, in an outlying part of the district, in a residential neighbourhood where few firms ever had to be visited. Now, to get through the necessary number of visits they had to be arranged in streets and districts, so that twelve to fifteen close together might be visited on any one day. In practice it was impossible to make a special expedition to Dash and Co. in order to obtain a report just on Bobby Smith when all other visits for the day lay in the opposite direction. The investigators had to defer their visit to Dash and Co. until they had accumulated enough visits in that direction to make a day's tour there worth while. By that time other causes of delay might have arisen. The extra work entailed on the exchange officers by the visiting of these cases had of necessity to be subordinated to some extent to the requirements of their official duties. Hence during periods in which their own work was exceptionally heavy, or when there was a temporary shortage of staff, these extra duties had to be held up perhaps for some weeks.

When in due course the investigators were able to visit the employers it might be found that in the meantime Bobbie Smith had become sixteen, and, on applying at the exchange for his insurance card, had reported that he was working at Nonesuch Bros., giving no information as to when he went there or why; and although a round of visits in the direction of Dash and Co. had now accumulated, Bobbie's name had already been marked off Dash and Co.'s card, and the card itself had been filed away among the 'past' employers.

Or, perhaps, no information at all had been received about Bobbie in the interval; Dash and Co.'s card was still out, and a desperate effort was made to tramp in their direction at last.

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Dash and Co. were at length called on. "Bobbie Smith?" the manager would say, after having been reminded of the purpose of the investigator's visit, explained to him on a previous occasion. "No, I don't know a lad o' that name—ain't got 'im 'ere now, anyway. Probably a chap wot I took on an' never turned up. No accountin' for what they'll do these days; nine out o' ten o' them don't turn up after I've taken 'em on." On its being explained that Bobbie Smith had already been there for nearly a year when he had sent the information, the manager would think a little further and appeal to his office-girl or foreman, who might have a vague recollection of somebody who had left months ago, and be able to give the manager some identification particulars. In some cases wages-books would be referred to, and the date to which wages were last paid ascertained. The manager might by then have recovered some vague recollection of the boy as the result of conference with the office-girl. "Wasn't 'e the chap as went to that wireless place down City Road way? Smith? I think that was 'is name. Oh, 'e was orl right, miss—like the rest of the boys, no better, no worse. Boys aren't what they used to be in my young days, you know. We 'ad to work in them days—not so much coddlin' and lookin' after then. Can't get a boy now as can write 'is own name, believe me, miss. . . . W'y did 'e leave 'ere? Oh, walked out like the rest of 'em—they don't trouble to give no notice these days."

So for the time being Bobbie was lost trace of, until the next batch of letters was sent out, or until some one paid a round of home visits in his district; and the story would begin over again.

Not infrequently on such occasions Bobbie would report that he was still working at Dash and Co.'s, and had been all the time. Dash and Co.'s card would be again brought forth, and Bobbie's name re-entered. Again an effort would be made to visit Dash and Co., allowing, as before, the necessary interval to elapse (during which time, of course, Bobbie might easily really leave Dash and Co.). Eventually another visit would be paid, and the situation explained to the manager. Perhaps by this time he was acquainted with Bobbie's identity, and a report was forthcoming, and the manager would have no recollection of having ever denied knowledge of him. At other



times the mystery remained. Bobbie Smith was still unknown, and all efforts to trace him were fruitless.

Sometimes the employer needed the boy's address in order to furnish the desired information. Here it was clearly impossible for the visitor to carry with him all the identity marks which might be required; and perhaps a difficulty such as the following might arise.

"Main Street? Oh! you mean Ted Martin! Yes, 'e lives in Main Street. Course we've got Ted Martin—been 'ere a long time, 'e 'as. That's 'oo you mean—Ted Martin. Now I come to think of it, there was something about 'is changing 'is name when 'e come 'ere. Smith? I believe 'e was known as Smith at school; got a stepfather or something, 'asn't 'e? 'I, Bill; ain't Ted Martin the lad as 'as a stepfather? Lives in Main Street. Wot's 'is stepfather's name?"

Bill would perhaps confirm the fact that Ted Martin's stepfather's name was Smith. Perhaps Ted Martin was himself produced, and admitted (or refused to admit) his identity with Bobbie Smith. The change in Christian name, by the way, was found to be sufficiently common as not to strike the investigator even as peculiar or as demanding any explanation.

In practice, therefore, it was not possible to obtain reports at regular intervals. The original scheme had been to make an inquiry of an employer once a year (provided that the child stayed in the same employment), so as to ascertain what progress, if any, the child had made since the last report. This was carried out so far as possible in view of the difficulties mentioned above, but in practice the intervals elapsing between the receipt of reports might be considerably more than a year, or at times even considerably less. The investigators might, for instance, have to visit a firm about another boy within the year, when the position with regard to the first boy would be brought up to date even though a second report was not yet due. Intervals between the receipt of reports were therefore of very varying length, and no definite record could be kept of a boy's or a girl's progress by means of reports at stated intervals which were the same for all cases.

Besides the practical difficulties of visiting employers at regular intervals, other difficulties were met in obtaining and assessing reports when the employers were visited.

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### 4. DIFFICULTIES IN OBTAINING REPORTS FROM EMPLOYERS

With regard to these difficulties the type of district in which the inquiry was carried out should be remembered. Many of the firms concerned were small 'one-man' businesses carried on in the front parlour of private houses, in small workshops built in a yard in a back-street, or in one or two rooms of a building let off to many firms; others were small shops, laundries, etc. Some of these employers were uneducated working-people who understood little or nothing of industrial efficiency or scientific methods.

In the larger firms it was often impossible to obtain access to anyone who could give information based upon personal knowledge; the report was sometimes obtained from a clerk in the inquiry office or from a time-keeper at the door who merely knew the child concerned by sight and had never heard any complaints about him. Where the visitor gained admission to a higher authority it was found in the larger firms that the staff manager, departmental head, or whoever it might be, often had little or no personal knowledge of the juveniles working for the firm or in the department. Reference might be made to the wages-book to ascertain whether the boy or girl was still employed; or, where the manager was more than usually co-operative, he might send for the foreman or immediate supervisor who was responsible for training the particular juvenile; but these last cases were comparatively rare in the district in which most of the work was carried out.

This district contained two of the largest companies of carriers; these employ a large number of boys as van-boys. Though such posts are not nominally temporary, they become almost so in practice, since the number of vacancies occurring in the adult staff as motor-drivers or warehousemen is extremely small in comparison with the number of juveniles employed; and in practice the majority leave by the time they are sixteen, regardless of their efficiency in the work which makes little demand upon them, or of their suitability for the work of the adult to which there is a remote chance of promotion. One of these two firms alone employed at one time or another over 5 per cent. of the boys concerned in the experiment.

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The district contained also three of the largest main railway termini and goods stations; and here, too, a great many boys were employed as van-boys or less frequently as messengers. Subject to a satisfactory medical examination, these appointments become permanent; and the boys remain as van-boys or messengers until the age of eighteen, when they are drafted to various railway departments. Between the ages of fourteen and eighteen—*i.e.*, during all the years covered by this inquiry—there is little that can be said regarding the efficiency of the boy or his suitability either for the work he is on or for the work to which he will progress, the nature of which is not at the time determined.

In the cases of these firms of carriers and the railways the visitors received reports from the various offices concerned; but the clerks giving the information had no knowledge of the boys, who were distributed at the various depots. The visitors had to report at which depot the particular boy was employed. The wages-books were referred to, whereupon the clerk was able to ascertain whether the boy was still employed, and, in the case of the railways, whether he had yet been placed on the permanent staff. Any definite complaints regarding the boy might also be recorded, but short of this no further details could be obtained; or if the boy was no longer employed the date of his discharge or resignation could be ascertained and, in the former case, the reason for the discharge.

The district also contained a number of factories of the principal tobacco firms employing very big staffs, including a large number of the girls concerned in the inquiry. These firms were popular among school-leavers because of the good conditions which they usually offered, the comparatively high wages for beginners, and the security of the posts, whose holders were likely to suffer little from unemployment. With these firms also inquiry had often to be made in the office or show-room from a clerk or employment officer who knew little or nothing of the individuals employed in the factory; and although he often went to the department concerned to make inquiry from the departmental head or forewoman, the reply brought back was usually a mere statement that she was "getting on all right" or that she was "quite satisfactory," no opportunity being available for obtaining fuller particulars.

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The amount and value of the information received from employers varied very much from district to district. Much more detailed information was as a rule forthcoming in the West End and City districts, where the employers, on the whole, were better educated people with rather more comprehension of the purpose of the inquiry. In the small firms where the employer himself was seen he was often interested in the experiment and willing to co-operate; and, as he had also a personal knowledge of the workers, he was able to give fairly reliable information. In the case of the larger firms, in which the staff manager had little personal experience of the work of the juveniles, detailed records of progress were often sent at regular intervals to the employment office, and these were consulted so as to form the basis of a report.

In assessing the value of the information received from the employers it may be worth noting that out of approximately 2000 employers visited one or other of the difficulties described below under various headings was met with in all but fifty-four of them.

### (a) Failure to understand the Point of the Inquiry

For many of the employers boys were just boys, and the whole explanation of the purpose of the experiment left them as much in the dark as they were before.

Sometimes, however, in spite of the inability of the employer to understand the experiment, information of some value was nevertheless received. One 'small' employer, for instance, anxious to do all he could to help, and greatly impressed by the magnificence of the word 'psychology,' demanded a definition of the term when the representative of the Institute was introduced to him. On some explanation being given to him, including a short account of the experiment and the information that the investigators believed two girls on their lists to be employed by him, he rushed out of the room to which he had invited the visitors, without waiting to hear the girls' names, calling at the top of his voice to his forewoman, "Hi, Sophie, have you got two girls here with psysiological minds? Go and find out which they are." On his return (Sophie having gone off to the work-room to make her investigations) the visitors gave him the names of the two girls about whom information was

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wanted, whereupon he immediately tore out again shouting to Sophie that it was all right and calling for her presence. Presently he returned, accompanied by the said Sophie, and the explanation of the experiment was again given. Sophie at least grasped the situation sufficiently to realize that what was wanted was information as to the kind of work the girls were on, and their ability in it; and she was able to tell the visitors what different types of work the girls had been on, and at which processes they had been best. She and her master together then accompanied the visitors over the factory, showing them the work that was actually being done, and pointing out the particular girls in whom they were interested. So information of value and of fair reliability was received, and the visitors departed on the most friendly terms with the employer, assured of his willingness to co-operate in the future by remembering always to employ girls with "psysiological" minds!

### (b) Failure to realize Individual Differences or Requirements of Work

Ignorance was, of course, responsible for the failure of many of these 'small' employers to recognize the existence of individual differences. "Oh, he's like all other boys—no better, no worse," was the frequent response to the visitor's inquiries. To them it appears that what one boy can do another can, and if he does not it is because he does not work so hard. Differences in industry and honesty are realized, and as a rule differences in intelligence, or what the *employer* chooses to call intelligence. The boy who is giving most satisfaction is most intelligent, and will be better at any work.

Often, too, they fail to realize the requirements of the job; honesty, cleanliness, willingness, are the points on which reports are most commonly given, and if a boy can be well spoken of in these ways, then he is suitable for his job.

It is often realized that 'jobs' require different grades of intelligence, but the idea of there being a maximum as well as a minimum level of intelligence is quite incomprehensible to them. "Oh, he's all right, but he's on a job any boy can do; it doesn't require any intelligence," was a very frequent form of report. And yet if they come across a boy who can't do it he is a fool indeed! The possibility of his having too much intelligence, or

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of there being incompatibilities of temperament, or lack of the requisite manual skill, has never occurred to them. They still hold the paradoxical opinion that the 'job' requires no intelligence, but that the boy who fails in it does so through lack of intelligence!

Even in these cases, however, information of some value was often received. The employer who realized that one boy was better than another, and was willing to say so, was giving useful information even if his analysis of the reasons was entirely erroneous: the visitors were given the chance of analysing the reasons, and lack of industry or willingness might be the effect and not the cause of unsuitability of the work. The employer in this district who could correctly analyse the reasons for himself was very rare.

### (c) Employer who thinks more of Effort than Ability

Most unreliable of all, from the investigator's point of view, because liable to give information which could be wrongly interpreted, were those employers who realized, at least in some vague way, the existence of individual differences, but to whom effort was more important than achievement. With such employers the less suitable worker was apt to receive the better report, because, by very reason of his unsuitability, he had to put forward greater effort, and, therefore, deserved greater credit for any progress he might have made. One girl, for instance, entered an occupation from which the investigators had done their best to dissuade her. After some months they called on the employer, and were informed that the girl was a very good worker and making splendid progress. It seemed, indeed, as though their advice in this case had been unwise. But a year later they visited the employer again and received a similar report, but with an addition which threw a different light upon the situation. "Oh, she's a very good girl. She's quite suitable; works hard—making splendid progress. Of course, she can't help being slow, can she? It's not her fault that she takes two years to learn what another girl would learn in one. She's getting on splendidly, considering."

### (d) Inquiry treated as a Welfare Inquiry

One of the most common misconceptions on the part of the

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employers was that of thinking of the inquiry as one regarding the welfare of the individual boy or girl; the employer's attitude was as toward an inspector who wished to see that the juveniles were being properly treated. He would describe all that he did for his employees, how he gave them an annual outing, provided rest-rooms and canteens, etc., rather than what the employee did for him. In one case, for instance, nearly the whole of the interview was taken up with an account of the great length of service of many of the workers, the friendly terms they were on with the management, ending with the reading of a letter written to the employer by the widow of an employee recently deceased, thanking him for having paid all the funeral expenses, thus making it possible for them to have a really good funeral, of which a description was given. All that could be told of the girl in question was that she always seemed happy.

Emphasis in such cases was laid upon the virtues of the firm, not of the employee, and often a great point was made of the fact that they did not turn employees off, even if they were inefficient. It was interesting to note, too, how often this statement was made by firms in which the only report that could be given about an individual employee was "He must be all right or he wouldn't be here."

### (e) *Misunderstanding*

One difficulty met with—less frequently, however, than the last—was that of misunderstanding on the part of the 'small' employer.

First, there was misunderstanding with regard to the motive for the testing of the child. The Institute was sometimes looked on as a sort of asylum; psychology was confused with psychotherapy, with psycho-analysis, even with spiritualism. This attitude on the part of the employer would produce the remark, "Was there something wrong with him, then?" "Was she delicate or something?" This was especially found where there had been any trouble, as in one case in which it so happened that the mother had visited the firm the day before, in a drunken condition, to complain because her girl had not been promoted. Sometimes the employer expressed surprise at the testing because he had always found the boy quite normal,

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psychological tests being taken as evidence of the fact that he must have been considered abnormal. Sometimes, too, the testing was taken as evidence that the child was supposed to be particularly bright, and that an especial interest was being taken in him for that reason. But by some employers the opposite idea was held: psychology was apparently considered as dealing only with the ordinary. "You know, I'm interested in psychology myself, miss," one employer informed his visitors, "but I wouldn't put this boy into the category of psychology. He isn't like the ordinary boy; he's better than the ordinary—more intelligent."

Secondly, suspicion was sometimes aroused not with regard to the motive for testing (which probably was not grasped at all), but with regard to a hidden motive for the inquiry at the firm. This, too, was more liable to occur when there had been any ground of complaint among employees.

### (f) Anxiety to Please

Sometimes the employer was anxious to please the visitors, who were thought to be interested in the particular boy in question and anxious to hear that he was doing well. He would report, "Oh, he's getting on all right," because he did not wish to give offence. At times this statement was made before the name of the boy in question was even mentioned! Some employers seemed to be capable only of assent, and the reply one obtained depended entirely upon the way in which the question was put. Often a satisfactory report was given in cases where it was afterward found that the young person in question had already left the service of the firm. On one occasion an inquiry was made about a boy and a satisfactory report given by the employer; it was afterward found that the boy had never been in this firm at all, but in another firm of the same name doing quite a different type of work!

### (g) Inability to give Desired Information

It has already been pointed out (p. 176) that the individual interviewed, whether a manager, departmental head, or merely an inquiry clerk or time-keeper, often had no personal knowledge of the individual employee's work. Even where records



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were looked up these were often inadequate. Sometimes surnames were unknown; and Christian names were uncertain, being often different from the names by which the children had been known at school. Tommy or Billie, running errands in the stock-room, might or might not be the same as Edward Smith or David Jones who were reported to be learning the work of the firm. Even the wages-books sometimes recorded Christian names only, and not the names by which the investigators knew the children.

On the other hand, there were firms which went to the opposite extreme, in which every employee was known only by a number, and no report could be obtained unless this number was known.

There were firms, too, which kept no record of individual output. So long as a department as a whole turned out what was wanted when it was wanted no inquiry was made as to the part played by Polly or Jane in the total production.

### (b) Unwillingness to give Information

Sometimes difficulty arose in obtaining reports through the unwillingness of the 'small' employer to co-operate. This might be due to lack of time; a butcher interviewed in his shop with customers waiting to be served could hardly be expected to take a great interest in the inquiry, or to be willing to spend time discussing the special qualities of his errand-boy. Lack of interest in the employees or their welfare was also a frequent cause of the disinclination on the part of a 'small' employer to spend time discussing the question.

Some employers were found who resented any interference and looked upon all inquiries as unwarranted intrusion. This was especially so in old-established and conservative firms, who had never known such a thing happen before and regarded anything modern as merely another sign of the decadence of the times.

Often an employer was manifestly unwilling to say anything to an employee's detriment, for fear of injuring his future career. This, of course, was really due to lack of understanding of the point of the inquiry. It was interesting to note how seldom an unsatisfactory report was given about the employee concerned by those 'small' employers who declared, in general,

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that modern education was entirely unsound, and that it was impossible in these days to get a satisfactory boy or girl. The boy about whom inquiry was being made was almost invariably said to be quite satisfactory.

This prejudice against modern education was often combined with the failure to realize the existence of individual differences. All inefficiency was blamed upon education. If a boy could do one thing he could do another; if he were unable it was because his education had been wrong. One employer brought up as a proof of the inefficiency of modern education the case of a boy he knew who had passed music examinations and therefore must be able to learn shorthand; and the fact that he was unsuccessful in a shorthand course proved that it was being badly taught! The same employer in giving his report about the boy under inquiry declared that he was quite satisfactory and doing his job well, but that he was on a perfectly simple job which any boy could do; and then embarked on a tirade against modern education, declaring that it was quite impossible in these days to get a boy who was able to do the job!

### 5. DIFFICULTIES ARISING IN THE INTERPRETATION OF REPORTS

Besides all these difficulties experienced in obtaining information from employers, others arose over the interpretation of the information given. Some of the causes of false interpretations are obvious in the account given of the obtaining of reports, as in the case of the employers who reported on effort rather than suitability. Perhaps the chief dangers of misinterpretation fall under two main headings.

#### (a) Considerations other than Efficiency in Nominal Work

Considerations quite other than efficiency in the work which the boy was supposed to be doing often entered into the employer's report. A boy's willingness to do other jobs, his social adaptability to his surroundings, might be the things that mattered. One boy, for example, reported that he was learning to make perambulators—an occupation apparently coming under the heading of woodwork. The 'firm,' when

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visited, was found to consist of "me and the missus," and this boy was the only employee. The employer reported him to be "a very good boy—quite like one of the family and a perfect little gentleman. 'Elps the missus in the kitchen, an' takes the kids out in the park when 'e 'as time to spare." Satisfactory as the report was, it told nothing regarding efficiency in woodwork. It might be taken more appropriately, perhaps, to indicate efficiency as a houseboy or nursery helper!

### (b) Psychology of the Employer

The psychology of the employer had often to be taken into account nearly as much as the psychology of the employee. A motherly, good-hearted, but muddly old lady was visited in a little laundry in a back-street of a slum district. "I couldn't wish for a better boy" was her exclamation when his name was mentioned. "If 'e were me own son I couldn't say no different." She went on to extol Tommy at length, giving account of all his virtues, how he took such an interest in the business and often looked through the books and told her she had made a mistake in entering, etc. No doubt Tommy's occasional correction of her extremely shaky entries marked him out in her eyes as a paragon of efficiency, and spoke more of the state of the business than of Tommy's ability. Other reasons for the happy state of affairs existing between Tommy and his employer soon became apparent as she expounded his virtues further. "'E's such a nice boy . . . always willing to stay late and to come on Sundays. . . . And we often give 'im a bit o' dinner 'cos we all like 'im so much." She continued, "I don't want to speak no 'arm of no one, but 'is mother ain't wot she should be. She ain't one to deny 'erself for the children, an' that's the truth."

Here lay the crux of the situation. Tommy was naturally willing to stay in the evenings and to come on Sunday where some one took an interest in him; and his employer, who must have some one to mother and whose own sons were grown up, had found in her employee a child who appreciated the mothering he did not get at home. The reports meant nothing as regards Tommy's efficiency in a laundry, nor could this, in any case, be ascertained in such conditions, where the efficiency of the employer herself was more than doubtful.

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### 6. RATING OF THE INFORMATION RECEIVED FROM EMPLOYERS

In view of all these conditions leading to the misinterpretation of reports an attempt was made to grade all employers' reports on a five-point scale—A, B, C, D, E—according to the apparent value of the information, taking into account the employer's willingness to co-operate, his knowledge of the individuals, and his understanding, so far as could be estimated, of the point of the inquiry. The grading was, of course, a purely subjective one, depending upon the judgment of the particular visitor; and in dealing with the results afterward it was not found possible to distinguish between the different grades of report, the number of variables being already so great as to reduce the groups dealt with to very small ones. This grading was, however, sometimes useful for deciding which of two reports from the same employer was to be accepted, and whether a report was to be taken on its face-value or to be put into the indeterminate group.

### 7. VALUE OF EMPLOYERS' REPORTS

Valuable as these reports were as a help toward assessing the suitability of work, a short examination of them suffices to show that they are not sufficiently reliable to be taken in their entirety as a sole measure of success. Too many errors occur, both in the reports themselves and in their interpretation, for such complete reliance to be placed on them.

Of all the reports received 82 per cent. of those given on boys and 88 per cent. of those given on girls expressed entire satisfaction with the young person concerned. In view of the immense amount of complaining that goes on among employers regarding the general inefficiency of modern children, these figures are obviously absurd. There are probably two explanations of this paradox.

First, there is the unwillingness of the employer to say anything to the detriment of the lad or girl, for fear of doing him or her harm. In some cases unsatisfactory details were eventually extracted from the employer with difficulty.

Secondly, it must be remembered that the investigators

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visited employers only when the young person concerned had been at least three months in the work; nor did they visit then if they had heard in the interval that he had moved elsewhere. They therefore obtained reports only for those individuals who had been sufficiently satisfactory to stay at least three months. And yet a report obtained earlier would have been of little value, as the employer would hardly have had time to discover the young employee's efficiency.

As has been already noted, the lad or girl had sometimes left the firm before the visitors heard that he or she was there; or left while they were waiting for an opportunity to visit, and therefore no report was obtained. In general it can be said that the longer a young person was in the service of a firm the more chance there was that a report would be obtained, and obviously the more likelihood there was that the report would express satisfaction with his or her efficiency. There are so many possible reasons for leaving posts, and so many temporary posts available, that it cannot be assumed that all those who left posts after a short time were unsatisfactory. But obviously among the reports that the investigators failed to obtain a larger proportion would have been unsatisfactory than among those which were obtained.

This difficulty was impossible to overcome in practice. Theoretically, of course, all employers could have been visited, whether the employee had left or not, but the magnitude of the work (there were some children who had had over twenty posts in two years) rendered this impossible. Moreover, it would not have been worth while. A retrospective report could never compare in value with the report on a present employee; and to carry it out thoroughly would have meant, at times, visiting an employer for a report on a young person who had worked there for one day a year or more ago—an obvious waste of time. It was the investigators' experience that if the employee had left some time before the visit was paid the employer had usually forgotten all details about the child, if not its actual existence.

Since, however, this loss of the larger proportion of reports in unsatisfactory cases was the same for boys and girls in all classes of work, it was considered that for comparative purposes the employers' reports provided a fairly suitable criterion.

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### 8. POSITION OF INFORMATION AT THE END OF THE FOLLOW-UP PERIOD

In spite of all the difficulties detailed above in obtaining and assessing information, a very fair proportion of reasonably reliable information was eventually obtained. There were, of course, many straightforward cases in which no contradictions occurred, and in which the kind of work obtained was quite clear and well known, and the length of tenure fairly certain. Girls who were doing dressmaking, and had been in only one or two posts since leaving school; girls in domestic service, in shops, in clerical work, etc., where no doubt existed as to the type of work upon which they were actually engaged; boys who were openly and ostensibly running errands, and whose occupation went by no other name; boys doing woodwork in large and good-class firms, where one could safely assume that the woodworkers did not have to "elp the missus in the kitchen an' take the kids out in the park"; boys on various branches of optical work, of which the particular process was given—information about these and many others was straightforward and definite, leaving no doubt as to their industrial careers. Moreover, in many of those cases in which it was at first impossible to say exactly what was meant or what work was being done, eventually, either by further inquiry from the young person himself or from the employer, a more accurate account of the true meaning of the terms was obtainable.

Contradictions as regards the length of tenure of posts and the chronological order of posts apparently held simultaneously were, however, less frequently disposed of satisfactorily.

As it was not possible to inquire about all the 1200 children during the last week or two of the inquiry, it was decided to count information as being up to date if it was received any time after January 1, 1929. As, however, not a very great many inquiries had been made during the first three months of 1929, the majority of the information received in those cases which were counted as being up to date was received in April, May, or June 1929, during which time a final effort was made to get in touch with as many as possible of the boys and girls. This final effort was made by writing to all boys and girls, except a few from whom the Care Committee kindly undertook to

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collect information, about whom nothing had been heard since January 1, 1929, and then visiting the homes of those who did not reply to our letter.

Since, on the whole, there were indications that the young persons were beginning to settle and to stop somewhat longer in posts than they had done hitherto, the position as it appeared at the time of the last inquiry can be taken as approximately that existing at the end of July 1929, when the follow-up work ceased, although in most cases one could not be actually certain that no change had taken place since the last inquiry was made. Those for whom the last inquiry was made in May or June 1929 were sometimes found to have changed their posts a week or two previously; and it must be admitted that some of those about whom the final inquiry was made in the earlier part of 1929 had probably changed their work before the end of July. In some cases it was known that they had done so—too late to make further inquiry possible.

Assuming then, as we must in practice, that at the end of the follow-up period all the young persons were still in the posts that the investigators had last heard about (provided this information was received later than January 1, 1929), the position at the end of that period may be set forth as follows.

### Position of Information about the Boys at end of July 1929

Total number of boys dealt with . . . .	625
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#### *Whereabouts known between January 1 and July 31, 1929*

Present firm known . . . . .	512
Out of work at time of inquiry . . . . .	13
Unemployed through illness . . . . .	2
In reformatory . . . . .	3
Total . . . . .	530

#### *Position regarding the 95 boys not included above*

Kind of work known, but not actual firm . . . .	24
Known to be deceased . . . . .	1
Known to have emigrated . . . . .	5
Address unknown, moved from district . . . .	40
Lost trace of in other ways . . . . .	25
Total . . . . .	95

The whereabouts during 1929 of 84.8 per cent. of the boys was therefore known.

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### Position of Information about the Girls at end of July 1929

Total number of girls dealt with . . . . . 582

#### *Whereabouts known between January 1 and July 31, 1929*

Present firm known . . . . .	445
Out of work at time of inquiry . . . . .	8
At home, not desiring work . . . . .	6
Unemployed through illness . . . . .	7
Married . . . . .	3
Sent to institutions . . . . .	3
Total . . . . .	472

#### *Position regarding the 110 girls not included above*

Kind of work known, but not actual firm . . . . .	28
Known to be deceased . . . . .	1
Address unknown, moved from district . . . . .	60
Lost trace of in other ways . . . . .	21
Total . . . . .	110

The whereabouts during 1929 of 81.1 per cent. of the girls was therefore known.

From the above table it must not, however, be supposed that full and detailed information was available for all the 512 boys and 445 girls whose place of employment at the end of the inquiry had been ascertained. In many of these cases the past industrial history was incomplete or unreliable, and frequently contained contradictory or incompatible statements. A further table, showing approximately the number of cases in which information appears to be complete and those in which it does not appear to cover the whole of the period under consideration, or in which contradictions and incompatibilities have never been satisfactorily cleared up, will serve to show the actual position more clearly.

### Complete and Incomplete Information, Contradictory Statements, etc.

#### *Experimental and Control Groups Combined*

	BOYS	GIRLS
Number of cases in which the information appeared to be fairly complete throughout the follow-up period, including reports from the employers and employees on all posts held for six or more months . . . . .	109	130
Number of cases in which information appeared to be fairly complete with the exception of employers' or employees' reports. . . . .	175	134



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	Boys	Girls
Number of cases in which information is incomplete as regards the number of posts held or length of tenure of the posts <sup>1</sup> . . . . .	204	187

Number of cases in which contradictory or incompatible information is on hand <sup>2</sup> . . . . .	109	70
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Number of cases in which the names of firms or the nature of the work is not known for all posts . . .	114	123
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NOTE. The above groups are not necessarily mutually exclusive, since incompleteness and contradictions might occur in the same case.

<sup>1</sup> For 99 boys and 68 girls the intervals unaccounted for were of less than six months' duration, or, if longer than this, could be presumed to have been filled by some of the known posts, although it was not definitely ascertained. Such cases are considered as complete in the table.

<sup>2</sup> Contradictions regarding reason for leaving posts and cases in which firms deny employing a boy or girl known to be working there have not been included under this heading. For 54 boys and 11 girls such contradictions and incompatibilities were not very important and were overlooked in the statistical treatment.

## CHAPTER VII

### ANALYSIS OF FOLLOW-UP DATA

THE value, as a piece of systematic inquiry, of the work described in the preceding chapters will already be apparent. But no proof has yet been given that the opinions of the vocational advisers were well founded, or that the children gained, or could have gained, any benefit by being advised. This task must now be undertaken—at least, to the extent of trying to show that studies of a child's abilities enable his success or failure in an occupation to be foretold.

It has unfortunately proved impossible to demonstrate, as the investigators could have wished, that, by the procedure of advising, the children were helped to obtain more quickly work of a suitable kind, because so small a proportion of them were found to have acted upon the advice given. Owing, perhaps, sometimes to the condition of the labour market, but certainly also because of economic pressure at home, the children appear for the most part to have been forced to take the first, or the best paid, post available. How many seriously considered the advice at all is difficult to say; certainly little or no effort was made by the parents to find work for their children of the kind suggested.<sup>1</sup>

It was perhaps optimistic to have expected that the children would in general act against the force of economic circumstances or against their own inclinations (when these were contrary to the proposals of the adviser) on the recommendation of an Institute for whose help they had not asked and whose aims and principles they did not understand. At any rate, whatever the cause, the fact remains that few children actually started their occupational life in posts recommended at the school conferences, and even when the child believed that a post of the kind he wanted was waiting for him—a friend or relative having 'spoken' for him—it seems that his hopes were generally disappointed.

<sup>1</sup> Not more than 1 per cent. were *directly* influenced by the advice, but the indirect influences may have been much greater.

## ANALYSIS OF FOLLOW-UP DATA

The remaining task, however, is sufficient in itself. For if it can be demonstrated conclusively that the success or failure of the child in his work is related in some degree to the studies of his psychological make-up, and to the forecasts of efficiency based upon them, the benefits consequent on the acceptance of vocational advice may readily be imagined.

The first step is to find a satisfactory means of expressing such relations as exist between the complicated events in the child's career and the survey of his abilities and character. Two sets of measures are needed—one to express the success or efficiency of the adolescent in his work (*i.e.*, his suitability for it), the other to express the congruity<sup>1</sup> between the adviser's views as to his vocational potentialities and the post he has actually entered. The first need is met by noting how many posts the child has had, of what kind they have been, why they have been given up, how efficient the child has been in them, what the employer thought of him, and the like. The second need requires further consideration of the recommendations or proposals made to the child at the time of leaving school and of the grounds upon which they were based, and a grading of the posts actually obtained according to the degree of agreement or congruity with the recommendations shown by these posts.

### I. CRITERIA OF SUITABILITY

The only test of the intrinsic suitability of a post is the child's success in it; but success cannot be determined without considering the child's career in a variety of aspects. The most popular criterion of success—earnings—must be excluded in this inquiry because of the short duration of the follow-up; for the period immediately after leaving school is a time when posts without prospects generally carry more pay than those with prospects. Hence analysis of the follow-up data has been directed toward the elucidation of the following specific points:

- (1) The number of posts held by the child and the time spent in each.
- (2) The nature of the reports by children and employers on their efficiency in, and liking for, the work.

<sup>1</sup> See p. 197, n. 2.

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- (3) The reasons for leaving posts given by the children and by the employers.

It was considered reasonable to expect that, generally speaking, posts of high intrinsic suitability would, *other things being equal*, be retained longer than posts of low suitability. Assuming that all the accidents of industrial life, such as seasonal trade fluctuations, are distributed at random over the children in this experiment—and, as they appear to have so often acted independently of the advice offered, this seems justifiable—any differences that may appear in the *rate* of change of occupation between one group of children and another we may attribute to some definite cause, such as the suitability of the occupation for the child as expressed by his efficiency in it. If this be granted, then it would appear that, if a child who has entered what is regarded as a highly suitable occupation for him remains in it a considerable time, whereas another child has given up what seems to be a very unsuitable post within a few days, and if these phenomena are repeated frequently among the children under observation, we are justified in thinking that the judgments of suitability are well founded. By similar reasoning, any connexions that may be disclosed between the adviser's opinion and the employer's satisfaction with the child, or between the nature of the advice and the reasons for leaving, may be used as evidence of the value of that advice.

This evidence is shown in detail in Chapter IX, but the methods of analysis must first be explained.

### 2. STUDIES OF POSTS HELD

#### (a) Classification of Posts according to Type of Work

The first task was to classify posts according to the nature of the work to be performed. This piece of occupation analysis was very important, since any conclusions as to the suitability of a post would be very much affected by errors of classification. Three main classes were recognized, with appropriate subdivisions, thus:

(i) *Mental Work*. Work of a clerical type, in which the ability displayed through the medium of language is more important than the ability displayed in practical affairs, and in

## ANALYSIS OF FOLLOW-UP DATA

which the interest lies in papers and abstract ideas rather than in persons or concrete material. Manual and mechanical skills are considered to be relatively unimportant, although dexterities, such as are wanted in typewriting, are not disregarded.

Two sub-classes were employed according to the level of general ability required—high or medium—especially in relation to the demands likely to be made upon the child if promoted.

(ii) *Social Work*.<sup>1</sup> Work involving either social contacts or the ideal of personal service—*i.e.*, work in which the interest lies in persons rather than in papers or concrete material. Personality and temperament are here important, and play a large part in the judgment of the suitability of the work.

Two sub-classes were made for the girls according to the intelligence, social status, and type of personality required.

A similar division was not needed for the boys, as the openings were far fewer.

(iii) *Manual Work*. Work in which the interest lies in concrete material and construction.

Three sub-groups were found necessary—skilled, semi-skilled, and unskilled—according to the levels of intelligence and dexterity required. In the case of boys the skilled group was further divided into four sections according to the nature of the work and the materials to be dealt with.

Thus there were, in all, nine broad classes, or types, of work for the boys, and seven for the girls. (See Table on pp. 196, 197.)

It will readily be appreciated that some of these classes contain a variety of kinds of work, and that the differences between members of the same class are sometimes considerable. The smallness of the groups, however, as well as the incompleteness of present-day occupation analysis, make it difficult to subdivide further. On the other hand, the psychological differences between the classes correspond closely to those used in framing the original recommendations, the occupations classified being, of course, those available to the children concerned in the experiment.

<sup>1</sup> 'Social Work' is here used for any work which involves human interest, personal service, or contacts in which ability to 'mix' with others is a primary requisite. It is not used in the generally accepted sense of work for the improvement of social conditions.

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BOYS	GIRLS
<i>Mental Work</i>	<i>Mental Work</i>
Class I. Office-boy Junior clerk Post-office (messenger) Etc.	Class I. General office Shorthand and typing Post-office Etc.
II. Minor clerical Warehouse Etc.	II. Minor clerical Cash-desk Warehouse Shop (clerical) Etc.
<i>Social Work</i>	<i>Social Work</i>
III. Page-boy Kitchen-boy Shop assistant Messenger (shop, factory, etc.) Attendant Porter Etc.	III. Showroom Nursemaid Domestic servant (superior) Etc.
	IV. Shop (counter) Errands Lift-girl Waitress Domestic servant Etc.
<i>Manual Work, Skilled</i>	<i>Manual Work, Skilled</i>
IV. Printing Bookbinding Leatherwork Etc.	V. Dressmaking Millinery Tailoring Leatherwork Bookbinding Etc.
V. Furniture Cabinet-making Upholstery Etc.	
VI. Metalwork Engineering Instrument-making Jewellery Watch- and clock-making Silversmithing Electroplating Etc.	

## ANALYSIS OF FOLLOW-UP DATA

BOYS	GIRLS
<i>Manual Work, Skilled—continued</i>	
Class VII. Heavy constructional work	
Building	
Joinery	
Plumbing	
Painting and decorating	
Masonry	
Etc.	
<i>Manual Work, Semi-skilled</i> <sup>1</sup>	<i>Manual Work, Semi-skilled</i> <sup>1</sup>
VIII. Optical work	Class VI. Artificial flowers
Boot and shoe	Box-making
Assembling	Brush-making
Etc.	Optical work
	Fancy packing
	Etc.
<i>Manual Work, Unskilled</i>	<i>Manual Work, Unskilled</i>
IX. All kinds of routine factory work	VII. All kinds of routine factory work (e.g., bottling, labelling, nutcracking, carding, etc.)

### (b) Judging the Suitability of Posts Found

The original recommendation expressed the adviser's judgment of what would be suitable work—*i.e.*, work in which efficiency might be expected. The new problem was to determine the extent of agreement or degree of congruity<sup>2</sup> between the post obtained and the post recommended or approved. A comparatively crude solution may be obtained by saying whether the post the child has taken is *like* or *unlike* the post advised, basing the decision perhaps upon the resemblances, if any, between the classes (listed above) to which the posts belong. But there are obviously *degrees* of likeness, and the

<sup>1</sup> These occupations are classified as semi-skilled on the basis of the psychological abilities required for performing them. They are not necessarily those which are generally known as semi-skilled in normal industrial terminology. A few cases of tailoring among boys were also put in this class since they were too few to make a separate class among the skilled occupations.

<sup>2</sup> Congruity is used throughout this analysis in the sense here described. It was found confusing to talk about the 'suitability' of posts as judged by agreement with advice, because of the distinction between 'real' suitability and 'judged' suitability.

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twofold division—like and unlike—creates many practical difficulties: in attempting a twofold analysis in the earlier stages of this investigation it was found impossible to carry it out in a wholly satisfactory manner. Accordingly, grades of suitability, A, B, C, D, E, were allotted on the following scale:

*Grade A.* A post which gives considerable scope for the development of the abilities possessed by the child; it is the post, or one of several posts, judged to be best fitted to his or her psychological make-up. The type of work recommended at the time of leaving school was given this grade.

*Grade B.* A post affording some scope, but rather less than one in Grade A, for the development of the abilities possessed. It is not the best post, or one of the best posts, for the child, but is often another occupation in the same general class, or in a closely allied class, of work. The type of work proposed as an alternative to the principal recommendation was placed in this grade.

*Grade C.* A post which affords little or no scope for the development of the abilities possessed by the child, but in which, nevertheless, he is likely to achieve a satisfactory measure of success, and to behave to the satisfaction of the employer. Posts of this grade were numerous, so that it was sometimes found useful to use C + and C - to indicate tendencies toward higher or lower grades of suitability.

*Grade D.* A post which does not accord at all well with the child's abilities or temperament, and in which it does not appear very probable that happiness or success will result.

*Grade E.* A post in which it appears extremely unlikely that the child will be happy or successful.

Every recorded post actually held was graded in this manner, the work necessitating constant reference to the results of the psychological examination and to the proposals made to the child at the time of leaving school. It will be understood that these gradings of posts have no meaning apart from the children to whom they refer; there is no attempt to grade occupations on



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a 'suitability scale'; for work which is graded A for one child may be graded D for another. The grading represents an attempt to assess the 'adjustment' between the child and the post.

It should be particularly noted that posts graded C may be of at least two kinds. A boy of good abilities, both intellectual and manual, capable of succeeding in clerical work or in a highly skilled trade, may have taken a post in Class IX (unskilled). This type of work is not at all in accord with the advice given, since it affords no scope for the development of the boy's recognized abilities, and, unless there is a definite prospect of some better post resulting from it, the boy would be well advised to leave it. Nevertheless, there is no reason to suppose that the boy will do the work badly; on the contrary, he may be expected to do it well, but even if he does so his abilities are not being appropriately employed. The post cannot therefore be graded higher than C.

In a second case the child may possess such poor abilities or such lack of the personality required for 'social' work that the only work for which he can be recommended is of the unskilled type. Work in Class IX (VII for girls) would therefore be graded A; all work outside this class would be graded D or E. But within Class IX, boys, or Class VII, girls, some posts may be in closer agreement with the advice than others, the least congruent being graded C.

Hence a post graded C may be held either, as in the first example, by a child whose supposed abilities are not fully employed, or, as in the second instance, by one who is not able to supply the skill and personality believed to be needed for high success in the work.<sup>1</sup> In the former case a grading C\* was given.

### (c) Statements from Employers regarding Efficiency of Children in the Posts held by them

Just as in grading posts for congruity with the Institute's advice, so in taking the employer's opinion of the child's work as a criterion of suitability a scale of ratings was found to be

<sup>1</sup> In some of the tables compiled from the follow-up data posts of these two types (graded C) were kept separate, but insufficient differences were found between them to justify separate treatment (see p. 241).

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necessary. The scale (which was not, however, communicated to the employer) was as follows:

*Grade 1.* All expressions of opinion of the type of "Highly satisfactory," "Above average," "Very good indeed," and the like, whether enlarged upon or not.

*Grade 2.* "Satisfactory," "Average ability," "All right," "Getting on nicely," "Appears suitable," and similar remarks. 2 + was assigned if some qualifying remark was added suggesting a rather better degree of suitability, especially if the employer showed that his report of "Satisfactory" was founded upon knowledge, and was not given merely on the absence of definite facts one way or the other. 2 - was given if some qualifying remark was added suggesting doubt as to the real suitability of the boy or girl for the work. *E.g.*, "He's all right, but nothing brilliant," "Quite satisfactory, but won't go far," "Nothing special," etc.

*Grade 3.* Reports such as "Unsatisfactory," "Not very good," "No use," "Doesn't seem to take to it," "Will never work," etc.

*Grade 4.* Used when no report on efficiency was given at all, the remarks made being on irrelevant or minor points. *E.g.*, "Nice little chap," "Comes from a good home," "Gets into bad company," "Quite clean and punctual and honest," "Getting better now, but we had some trouble at first because he would eat onions and the other workers objected."<sup>1</sup>

### (d) Statements by the Children regarding the Suitability of the Post

Although the reports by the children were expressed in rather different terms from those used by the employers, a similar scheme of grading was applicable. Four similar classes of report were utilized, scaled in the same way as the employers' reports.

### (e) The Significance of the Various Reasons for leaving Posts

It has already been pointed out (p. 151) that the exact reason for leaving a post could not always be ascertained. Nor has it

<sup>1</sup> These examples actually occurred, of course, during the investigations.

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been possible to say with certainty which of the reasons given either by the child or by the employer implied inefficiency (*i.e.*, unsuitability) on the part of the child. On the whole, it has seemed justifiable to regard the following reasons (when explicitly stated) as indicating unsuitability:

- (a) Dismissed for inefficiency.
- (b) Dismissed because physically unfit.
- (c) Dismissed for bad behaviour (the particular form of bad behaviour was always taken into account).
- (d) Left of his own accord because he thought the work was unhealthy.
- (e) Left because he did not like it (though this may refer as much to the conditions of the particular firm as to the type of work).
- (f) Left because there were too many errands.
- (g) Left because of restlessness—*i.e.*, wanted a change, wanted a holiday, etc.

It is obvious that these reasons do not necessarily mean unsuitability of the work. For example, bad behaviour may be due more to high spirits or to bad upbringing than to maladjustment to the work. Yet it may be due, just as frequently, to the repression of natural interests, or it may be a reaction to the monotony of the work or even a deliberate attempt by the boy to secure dismissal from uncongenial work.<sup>1</sup>

"Slackness of trade," which is one of the commonest reasons for leaving a post, does not directly imply inefficiency, though there are certainly many cases in which inefficiency is a determining factor, the least efficient being those most likely to be selected by the employer for dismissal. But in view of the fact that in many cases the newest comer, and not necessarily the least promising, was the first to go, it was thought desirable to exclude this reason from those denoting inefficiency or unsuitability.

For the same reasons "low pay" was excluded, though it sometimes meant that the child couldn't earn enough on piece-work. In almost every reason given by the child it is, of course, possible to find something connected with efficiency; even such an apparently impersonal reason as "Firm moved too far

<sup>1</sup> One boy admitted to the investigators that this was the case.

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away" may suggest unsuitability when contrasted with the fact that some children were willing to travel farther to a post in which they were happy. But in general it seems best to take the reasons at their face-value, and only the seven already listed (a—g) were regarded as implying some degree of unsuitability. Probably in some cases these reasons have been wrongly assigned, but there seems no reason to suppose that the errors will be other than randomly distributed; this being so, any differences that may be found regarding the distribution of the reasons for leaving, as between posts of high and of low degrees of congruity respectively, may be taken to be a true representation of the facts.

It should perhaps be added that in classifying the reasons for leaving no reference was made to the case histories of the individuals concerned, and therefore the judgments of the investigators as to the most suitable work for the individual play no part in this piece of analysis. Consequently, the value of the vocational advice will be demonstrated if the reasons for leaving which connote inefficiency occur most often in the case of posts that are least congruent with the advice given, and if a progressive diminution in the frequency of such reasons is shown in passing from the 'least congruent' to the 'most congruent' posts.

### 3. SOME DIFFICULTIES CONSIDERED

The results of these various methods of analysis are discussed in detail in the next chapter; but it will be helpful, perhaps, to explain some of the practical difficulties of this analysis and how they have been met.

#### (a) Classifying the Posts

In classifying the posts according to the type of work involved various problems arose, of which the following are typical.

(i) *Duties of the Post a 'Mixture.'* The post might require bits of various kinds of work, and the amount of each might vary. In those cases in which the work progresses in difficulty it may be impossible to discover at what stage the duties of the post change. Thus, a boy starting on odd jobs may do a little work at the bench on occasions; gradually the time spent on work at the bench may increase until, with the engagement

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of younger boys for the odd jobs, he may find himself wholly occupied in this way. Whenever it was known that an errand-boy post had prospects of this kind it was classified according to what it might be expected to lead to.

(ii) *Posts with Little, if Any, Prospects.* Classification was difficult in these cases because the prospects were so uncertain. An errand-boy, for instance, employed in a small grocer's or greengrocer's shop has little prospect of being engaged as a counter-hand, and only in exceptional circumstances can he be regarded as having found a post leading to salesmanship. Yet the post cannot be said to be leading to anything else! Similarly, only a small proportion of the van-boys engaged by firms of carriers have any prospect of employment as drivers, porters, or warehousemen.

Since the prospects of a post have a considerable influence over a boy's willingness to remain in it,<sup>1</sup> and since errands are often the only mode of entering a desired occupation, it seems reasonable to include posts in which the apparent prospects are good in that class to which the more skilled work to which it was leading would belong, even though it turns out that the post was left before this work could be begun.

On the other hand, it was realized that, in the case of the employers' reports, the nature of the work actually done was under discussion. The employer could only report upon what the child was (or had been) doing, and hence his report upon an errand-boy often gave no clue to the latter's suitability for the work to which he might later be promoted. It will be understood that this problem arose mainly in connexion with the posts held and relinquished during the earlier part of the child's career; in the case of those held at the time of the last inquiry the errand stage was usually past.

So also, in dealing with the child's expression of liking for a particular kind of work, it is to be remembered that it refers chiefly to the work the child is actually doing. Opinions as to liking work not actually tried were not of much value. Although the children were asked to say in their replies to letters how they liked their work and prospects, the replies dealing with prospects (especially when in the negative) mostly referred to the

<sup>1</sup> Prospects are immediate or remote. Not many of these boys or their parents seriously considered the remote prospects.

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estimated chances of being permanently absorbed into the firm, rather than to their anticipated liking for the work that they might expect to have to do.

### (b) Grading Posts for Congruity with Advice

It was by no means easy to grade posts for congruity with the advice given. The information available was not always sufficiently detailed or reliable to enable such estimates to be made promptly, precisely, or with certainty. The advice given to the children, especially in the later stages of the experiment, was often expressed in psychological terms with specific examples of suitable occupations.<sup>1</sup> These instances obviously did not exhaust the list of trades that might appropriately be considered; many quite suitable posts had never been mentioned. In carrying out the analyses some latitude had therefore to be allowed in deciding which posts were to be graded A, as being posts actually recommended or sufficiently similar to them in nature to be considered equivalent.

In this connexion it must always be borne in mind that abilities and temperament vary from child to child, and therefore posts are never exactly equivalent, even when the same kind of work is recommended to different children. Two types of work may be so much allied that the majority of the boys who are considered suitable for the one occupation may be recommended for the other. But cases will occur in which the second type of work is not quite so suitable as the first because the boy lacks some quality which is not demanded to quite the same degree by work of the first kind. Thus, carpentry and cabinet-making are similar in many respects, and have been proposed to many boys as alternative trades; but sometimes temperament or special interest or physique operates to make one of them less suitable than the other. In such a case, where the boy has entered the less suitable trade, a B, a C, or a D grading (according to type of work) has been given, although for another boy both types of work have been graded A.

Similar difficulties have been encountered in dealing with girls' posts. Clerical work and shop work have often been recommended together to girls possessing certain abilities and

<sup>1</sup> Cf. p. 129. Example: "Manual work requiring average intelligence and not too fine movements"—*e.g.*, (1) carpentry, (2) builders' joinery.

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personality, but sometimes one of them is negatived. Then, too, girls who are intelligent and also skilful with their hands may be equally suitable for clerical work and for skilled manual work, though in many such cases the former is much less suitable than the latter, or it may be even highly unsuitable.

The truth is, of course, that in the majority of cases no post can be regarded as ideally—*i.e.*, entirely—suitable; many posts are only partially suitable, because the individual lacks some quality essential to success. Metaphorically, if the holes are round the pegs are too often elliptical. But, in fact, holes occur in a variety of shapes, and pegs are found in numerous shapes, sizes, and materials. A complete and perfect fit is a rare event. The problem in this experiment has been to decide whether the pegs and the holes are satisfactorily paired; but when a hole appears to be pentagonal it is difficult to say precisely how well a hexagonal peg will fit it.

The information needed in forming such estimates was derived from a study of the records. Work of the type originally recommended to the child was always graded A; work not mentioned at the time but considered suitable after examination of the records<sup>1</sup> was in some cases also graded A, but was more often graded B. As a rule, it may be said that Grade A represents a judgment made at the time the child was advised, whereas Grade B is an estimate formed after a recent re-examination of the records. Similarly, Grade D or Grade E is in most cases a judgment made at this later stage, since not many occupations were definitely said to be unsuitable at the time the advice was offered.

It may be useful to observe that on records alone it is easier to rate a post for incongruity than for congruity with the advice. In other words, if the original advice expresses the 'real' suitability of the work for the child it is easier to judge that work is 'not suitable' than 'suitable.' The child recommended for routine factory work, for instance, may confidently be judged unsuitable for clerical work; and a boy who has been five years in a sanatorium for tuberculosis may be declared unfit to undertake baking, however suitable he may be in other respects. But to say what occupation such a boy should enter

<sup>1</sup> The scores in psychological tests, etc.; not, of course, the industrial history.

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is difficult without reference to some positive knowledge of his abilities and character. At the same time records, positive though they are, do not give all the help that they might be expected to give. It has been pointed out elsewhere (p. 130) that there were aspects of the child's personality which were present in the mind of the investigator when making a recommendation, but which were not successfully committed to paper. Hence it was too often felt that the summing up of the child's abilities compiled from the records left out some important feature which might have helped to solve the problem, and in such cases the congruity of a post could not be rated any higher than C. These occurred mostly in dealing with posts in Class III for boys, Classes III and IV for girls, in which temperamental qualities are of importance.

Grading of the posts held by the control group of children presented difficulties, because the information available about their capacities was limited, being only that provided in the report of the head teacher to the school conference, together with what might be inferred from the recorded decision at that conference. It had to be assumed that the work approved by the conference implied the possession by the child of the main qualities needed for success. But this did not show whether the qualities needed in *different* work were also present. The only practicable procedure was to allot grades of congruity according to the nature of the general differences, as shown by occupation analysis, between the work found by the child and that approved at the conference. Grade A, therefore, was almost invariably given to the type of work recorded at the conference, while Grade B was given to other work in the same class or in a closely allied class (*e.g.*, Classes III and IV for girls). Grades D and E, owing to the absence of definite contra-indications, could be given only occasionally, where a child whose ability was poor, as indicated by the school record and by the proposals of the school conference, was found attempting work requiring superior capacity.

But the chief difficulty in dealing with the posts of the control group was due, in part at least, to the fact that the conference's tacit approval of a proposed occupation did not always represent suitability as the Institute regarded it. As an illustration of several instances, a girl with an excellent school



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record informed the school conference that she had a chance of employment in a large tobacco factory. The work was known to be of a routine, or at best semi-skilled, nature, but permanent employment and good wages were assured in a firm regarded as one of the best in the district. From the conference's point of view no objection could be raised: it was a post which many girls would be glad to get. But, in estimating the suitability of any other post that the girl might have taken, routine factory work could not be taken as a measure of the child's abilities. In this case the 'good' school record was a useful piece of information, but in many others an 'average' record meant nothing. Generally, then, in interpreting the decisions arrived at by the conference, the child's school attainment (shown by class reached) and the head teacher's report, vague though it sometimes was, were taken into account.

Two examples may be quoted in illustration.

(a) *A girl who left school from the highest class.* The head teacher suggested either office work or handwork. The girl expressed a preference for bookbinding or for work in one of the big tobacco firms of the district. The conference thereupon entered "Tobacco or bookbinding" on the school-leaving form.

The type of work to be undertaken in the tobacco firm was not specified; much of it is, however, of a semi-skilled or unskilled type (Classes VI and VII). The girl's choice, in this as in many other instances, was prompted by the advantages offered by the particular firm, and was influenced only slightly, if at all, by the nature of the work.

After a short time in a toy factory the girl obtained a post in the tobacco factory where she is now engaged in *clerical* work (minor). As the head teacher had suggested this kind of work (and in view of the standard reached), the post was graded A for suitability.

(b) *A girl who left school from Standard VI.* This girl hoped to take up jewel-case making with her sister, and the suggestion was accepted by the conference. The head teacher reported that the girl's general intelligence was above average, that her class work was good, and that her exercise books showed care and original thought, but that her handwork was decidedly below average and that she lacked control.

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Such a record, so far as it goes, suggests that manual work, even of the semi-skilled type, requiring neatness and care, was not the ideal work for her.

The girl obtained a post in leatherwork, which is fairly closely allied to jewel-case making, but it could hardly be considered as a good choice. The follow-up has since revealed that she kept this post throughout the whole period, and at first showed good promise, but that her employer was eventually very much disappointed in her.

### (c) Posts requiring Two Gradings of Congruity

It was sometimes found necessary to grade a post twice, once for the work the child is actually engaged upon and once for the work to which he may be promoted. Even when he has progressed to the more skilled work it may be desirable to use two gradings, one for the work being done and one for the work previously done. Employers sometimes reported as follows: "He was quite satisfactory on errands, but does not seem to settle down to inside work; he takes no interest in it." "He got dissatisfied with errands and became lazy, and we nearly sacked him, but we gave him a chance inside, and he seems to be settling to it well and shows some ability as a mechanic." "He is excellent in cleaning and tidying, but not so good on the more clerical side of the work." "He was in the engineering-shop, but he was no use, so we transferred him to the wood-work department, and the foreman reports that he is doing quite well."

In a case such as the last, two employers' reports must be counted, an unsatisfactory report on engineering and a satisfactory one on woodwork. Generally speaking, although the child has had only one post (counting by employers) it has been treated in the analysis as *two* (counting by the types of work done). But, of course, it is necessary to do this in connexion only with some of the criteria, not with all. In dealing with length of tenure only one post can be counted (woodwork, in this example). But no hard and fast rule can be stated: each case has to be individually considered, and the best solution found for it. A good example is provided by the case of a boy working at an optician's who gave up his post because he was transferred to the engineering department during a slack time

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and did not like the change. In dealing with length of tenure the post was counted as *one* (in optical work); but in dealing with reasons for leaving, *two* posts had to be considered, one in optical work, which was apparently liked (unless the dislike of engineering was an invented excuse), and one in engineering, which was disliked.

### (d) Omission of Cases in which Records were Incomplete

Another problem of some importance which had to be solved before analysis of the data could be completed was the extent to which incomplete records should be included. It will be realized that in a proportion of cases, although the investigators had succeeded in keeping in touch with the children, the information supplied by them showed obvious gaps. Children who were in a state of perpetual change of occupation were naturally the most difficult to get hold of, so that by the time the information was forthcoming it was very much out of date and its reliability very much impaired. It is perhaps a fairly simple task for a boy who has had only two or three posts to give dates and times accurately, but it is very difficult for a boy whose posts run into double figures. The difficulty was accentuated by the fact that it was usually this type of boy or girl who failed to answer letters, and could therefore be reached only after much patient inquiry. Meanwhile his industrial history was fast increasing in volume. One boy, for instance, in a period of three years and four months was known to have had twenty-three posts; but the total time spent in them was, according to his figures, only two years. Of course, the intervals between so many posts, small enough to be disregarded singly, might make up a considerable aggregate of time, but at one period there was a gap of nearly six months, and it was unlikely that he would be out of employment for so long. At any rate, the boy himself had no recollection of it! In another case a boy appeared to have had, after three years and seven months, twenty posts covering only thirteen months. It was known, however, that there were many posts not accounted for—so many that the boy could not remember them!<sup>1</sup>

<sup>1</sup> The numbers of cases for whom the recorded posts actually ran into double figures were only thirty-five boys and eighteen girls; of these information appeared to be complete for only six boys and two girls. Of fifty-three boys

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Hence it is reasonably certain that the number of posts held by those whose records are incomplete is greatly in excess of the recorded number. But the number of recorded posts in these cases is, on the average, greater than those for whom records are complete. The inclusion of the incomplete records will therefore have the effect of bringing up the mean number of posts held by the members of any group much closer to the *true* mean, which would be obtained if all records were complete, than would be the case if they were excluded. On the other hand, these are the cases in which change of post is due to frivolous reasons; these are the more 'unstable' children; their vagaries are likely to exert a greater influence on the comparative results than is warranted.<sup>1</sup>

The only cases that must be omitted are those in which the information is incomplete because the child has left the district or has been lost trace of. In these instances a few posts were recorded covering the early days of follow-up, but, as no subsequent history has been ascertained, obviously they cannot be used.

### (e) Classifying Children according to Work recommended

In addition to the work of grading posts for congruity with advice and of classifying them according to type, it was necessary, especially in considering the number of posts held, to place the children in convenient groups according to the type of work recommended to them or found by them.

This presented few difficulties in the case of the experimental group; some definite recommendation had been made, and usually two or more alternatives were mentioned. When these alternative recommendations belonged to different classes of work of equal suitability for the child, he was placed under each, so that his industrial history, in all tables grouped according to recommendation, might be considered under each.

On the other hand, the children of the control group were more difficult to classify. The decision at the conference, as

and sixty-four girls whose records, although incomplete, showed between five and nine posts, some had changed with such frequency during the portion of the time for which information was available that it seems likely that fuller information would have shown that many of these had actually held considerably more posts.

<sup>1</sup> In Chapter IX the tables show the results both when these cases are excluded and when they are included.

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already remarked, had to be taken as a recommendation, but it could not always be taken as the *best* solution of the child's problem. For example, little can be concluded from the following: "An uncle is placing him in printing," or "He has a post waiting in cabinet-making." Sometimes the nature of the work was not indicated, as in "He has a post waiting at Brown and Co.'s." The boy himself may not have known what it was to be: very likely the starting post would be that of messenger-boy. But with this firm it may have been the custom to fill vacancies in the clerical, factory, or sales staff from the ranks of the messengers, and, knowing this, the conference would be satisfied that the boy was suitably placed, for they would naturally assume from their knowledge of the firm that promotion would be along lines which the employer would judge suitable to the boy.

From the point of view of the conference further specification seems unnecessary; a post at Brown and Co.'s could hardly be bettered. The conference, of course, is interested primarily in the welfare of the individual boy, rather than in the formal study of vocational guidance. But the Institute's problem, the classification of the boy according either to his work or to his abilities, must remain unsolved unless information from other sources is forthcoming.

On the whole, however, the task of classifying the children according to recommendation was much simpler than the work of grading and classifying the posts, and it is unnecessary to say more about it. Sometimes the decisions may have appeared rather arbitrary, but this seems inevitable. Neither human beings nor occupations can be pigeon-holed rigidly, nor is it the aim of vocational psychology to do this. Yet, in order to co-ordinate the data of this experiment, these classifications have had to be attempted. They have, however, always been carried out in as liberal a spirit as the needs of the situation would allow. Even so, it has seemed sometimes like trying to force an ever-changing and ever-growing substance into a pigeon-hole whose size and shape are unknown. Indeed, to attempt to give the pigeon-hole finite dimensions is like trying to describe the geometrical proportions of an amœba!

## CHAPTER VIII

### GENERAL RESULTS

LABORIOUS as was the task of collecting the information described in the previous chapters, the preparation of a statement of the results has been accomplished in the face of still greater difficulties. Vain efforts have been made to discover a relatively simple method of expressing the complicated relations that obtain between the many events in the child's working career and the estimates of his abilities and character formed by the investigators. But so complex are these data that simple statements or clear-cut issues are seldom possible.

Of all available methods of study perhaps the description of *single cases* is the easiest to understand. In a case study the reader may see for himself how the details of the child's career are related to the psychological or other studies of his make-up as summarized in the vocational advice offered to him. But, as it is impossible to describe and to explain in detail here the industrial adventures of nearly a thousand boys and girls, case studies can be given for only a selected few. The remainder must perforce be considered in a summarized and general form. The personality of each child—the chief factor in all vocational guidance—must thus be ignored, and, instead of concerning ourselves with the peculiarities of the individual, we must devote our attention to the 'average behaviour' of the group to which he belongs. Even so, generalizations regarding the group require a background of individual cases to give them meaning. Case studies should therefore come first, and a few illustrative ones will at once be described.

#### I. CASE STUDIES<sup>1</sup>

Case 1 is that of a boy who left school from a special craft class (in this instance boys were put into the special class only if they were unable to reach Standard IV). The results of the

<sup>1</sup> In all these cases the age of leaving school lies between 14 years and 14 years 3 months.

## GENERAL RESULTS

Institute's psychological examination may be summarized as follows:

*Intelligence.* Verbal tests: mental ratio,<sup>1</sup> 70 to 80 (very poor indeed). Performance tests: mental ratio, 94 (good average for the group).

*Mechanical Ability.* Distinctly above average.

*Manual Dexterity.* Percentile rank,<sup>1</sup> 46. Performance varied, but good on the whole; good at rapid movements.

*Form Relations.* Percentile rank, 85. Very good.

*Temperament.* Very negative, but co-operative, tender, and affectionate. Very pleasant disposition, willing, anxious to help; lacking in ambition, initiative, leadership, and energy.

*Medical Condition.* Averagely healthy; no special contra-indications.

*Home Conditions.* Fairly good.

*School Report.* Very poor all round, except for handwork and drawing, in both of which he was reported to be very good; neat, tidy, and artistic. Head teacher unable to make any vocational suggestions. In standardized tests of spelling and arithmetic he had not a single word or problem correct. (Tests suitable for year nine and upward were given; *i.e.*, his attainments were below those of a normal nine-year-old child.)

*Desires.* Wanted to take up printing. Parents had no plans.

*Recommendations.* Possibilities of repetitive work, assembling parts (such as wireless equipment), and of wire work were discussed. In view of his good performances in the mechanical ability and form relations tests, the former was eventually recommended.

*Subsequent Career.* He had held two posts: (1) in a gramophone factory for few weeks only (he left because it was too far to get home for dinner); (2) in a wire goods factory. He was still there at the end of the Institute's inquiry, when the firm reported excellent progress; he was well advanced for his age, and had passed to skilled work unusually quickly. The boy himself was discontented, because he felt that the work offered insufficient prospects.

While the boy might be encouraged to aim at something better, it is difficult to see how he is to find it. He appears to

<sup>1</sup> For the definition of mental ratio and percentile rank, see footnotes at pp. 64, 72.

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have obtained work highly congruous with the results of psychological study and to have been highly successful. But there can be no doubt as to his lack of verbal ability, and accordingly his chances of more responsible types of work are relatively slight.

**Case 2** is that of a boy of somewhat different qualities who left school from Standard ex-VII. The summary of the examination reads as follows:

*Intelligence.* Very good. Verbal tests: mental ratio, 110. Performance tests: mental ratio, 108.

*Mechanical Ability.* Below average.

*Manual Dexterity.* Slightly above average. No well-marked ability in any of the tests.

*Clerical Test.* Excellent score—101½ (75 was accepted as suitable for clerical work).

*Temperament.* Positive; possessing initiative, ambition, self-confidence (less marked), reliability, and persistence. Co-operative and fairly sociable. Nervous.

*Medical Condition.* Small, not robust, but averagely healthy. No special contra-indications.

*Home Conditions.* Good-class home; well cared for.

*School Report.* Good all round at ordinary school subjects. Manual work only fair. Head teacher suggested commercial work.

*Desires.* Parents and boy wished for clerical work.

*Recommendations.* Clerical work recommended, starting if possible on open-air work for health reasons.

*Subsequent Career.* One post only since leaving school. Started as office-boy (post, etc.), and was reported by the firm after one year to be satisfactory in this work, smart and keen, but lacking the general education required for further progress. Sixteen months later, however, the firm reported that he had been promoted to the position of junior clerk, and was one of the best boys they had ever had. He did excellent work, and not only carried out instructions very well, but was able to use his own initiative, and was frequently found helping with the post, etc. (his former work), when that department was busy or short-handed and he had time to spare. They anticipated that he would go far. He was still doing well in this post after three and a half years, when the inquiry ended.



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Here we have a good example of the type of case in which the school record and the psychological examination both suggest the same kind of occupation.

**Case 3**, that of a girl who left school from Standard ex-VII, is chiefly interesting because of the fact that, while the school reports 'good all round,' the psychological examination describes the relative strength of different abilities.

*Intelligence.* Good. Verbal tests: mental ratio, 95. Stanford-Binet tests: mental ratio, 105. Performance tests: mental ratio, 114.

*Manual Dexterity.* Percentile rank, 73. Good.

*Form Relations.* Percentile rank, 86. Very good.

*Dressmaking Test.* Up to standard accepted for West End work.

*Temperament.* Very positive, possessing initiative, ambition, self-confidence, and energy; sociable, co-operative, and a good leader; high-spirited, humorous, and full of mischief, but popular with her teachers and the other girls. One of the moving spirits of the school. Cheerful and pleasant in manner.

*Medical Conditions.* Very good physique, well developed, active, and healthy with no contra-indications.

*Home Conditions.* Good; well-kept home, but a large family.

*School Report.* Very good all round. Head teacher suggested library work.

*Desires.* The child had thought of going in for bookbinding or telephone-operating.

*Recommendations.* (1) Library (bookshop) or showroom, with possibility of rising to the position of forewoman or buyer. (2) As a less suitable alternative, dressmaking in a good West End firm.

*Subsequent Career.* Three posts. (1) Junior clerk (filing, post, stationery-keeper, etc.) in a large firm of manufacturing opticians. She held this post for fifteen months, and left because she wanted a rise in wages which the firm did not feel justified in giving. The firm reported that she was not very satisfactory, being careless and not interested in detail, and they did not consider her really adapted to office work. (2) She was then eight or nine months in another clerical post, and the firm reported that she had seemed suitable for clerical work, but had left them of her own accord to go to another clerical post.

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(3) She then went to clerical work in a restaurant, which post she had held for six months at the end of the inquiry. She reported that she liked the work, and the firm reported that they were satisfied with her.

On temperamental grounds clerical work would *not* appear to be very suitable for this girl, and the report received from the first firm was very much what one would have expected. Little detail is known regarding the exact work done in the last two posts. It is possible that clerical work in a restaurant involves greater variety and more social contacts than clerical work at a manufacturing optician's, and that it is thus more closely allied to the kind of work originally proposed (showroom work) than the first post. In any case, she had hardly held the post long enough for discontent to set in when the inquiry closed.

**Case 4** is that of a girl who left school from Standard VII, with fairly definite ambitions, which seem likely to be fulfilled.

*Intelligence.* Very good. Verbal tests: mental ratio, 110. Stanford-Binet test: mental ratio, 114. Performance tests: mental ratio, 108.

*Manual Dexterity.* Average.

*Temperament.* Positive, assertive, ambitious, self-confident, energetic, reliable, sociable and co-operative, and a good leader.

*Medical Conditions.* Healthy. No contra-indications. Tall and bright-looking.

*Home Conditions.* Very good home.

*School Report.* Good all round.

*Desires.* Wanted to work in a florist's shop, or in the millinery trade. The parents agreed to this and talked of setting her up in a shop of her own.

*Recommendations.* It was recommended that she should aim ultimately at shop management, entering as a learner. Although probably she would not be among the best of the applicants for this position as a learner, it was thought that she would gain admittance.

*Subsequent Career.* Two posts. (1) A temporary post, taken while awaiting admission to a West End firm, held for six weeks. (2) Flower department of a large West End firm, where she is making wreaths and is extremely happy. The firm report that she is very satisfactory in her work.

**Case 5**, by way of contrast, depicts a girl who left school from

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Standard V and who drifted somewhat aimlessly before taking a post in which she could do herself justice.

*Intelligence.* Rather below average. Verbal tests: mental ratio, 80. Performance tests: mental ratio, 65 (slow).

*Manual Dexterity.* Average.

*Dressmaking Test.* Not up to West End standards.

*Temperament.* Average or slightly positive. Fairly reliable, sociable, co-operative, energetic, ambitious, and assertive, with some initiative. Good appearance, neat, clean, and rather pretty; refined; rather shy, but cheerful.

*Medical Conditions.* Healthy, strong, but nervous. No contra-indications.

*School Report.* Fairly good all round (but only in comparison with rest of class—Standard V). Head teacher recommended office work; but perhaps in making this proposal the age of the child in relation to her class work was overlooked.

*Desires.* The child reported that she would like to be a nursemaid—a very sensible proposal.

*Recommendations.* Nursemaid or lady's maid.

*Subsequent Career.* Four posts. (1) Repetitive work in a perfumery; left after four months because the smell was too strong. (2) In a silversmith's as a learner. Little is known of this post, as she was there for less than one month. (3) Fancy leather work. She held this post for about thirteen months; her work was reported as satisfactory while she was there, though after she had left (ostensibly through slackness of trade) it was ascertained that she had been tried in all departments of the firm, but that she had been inefficient in each of them and had had to be dismissed. (4) Pantry maid in a private nursing-home in Mayfair. She had held this post for two years at the end of the inquiry and was very happy. The housekeeper reported that she was very satisfactory and would have been promoted to a higher grade of work, but had been left in the pantry at her own request.

It is interesting to note how this career corresponds with the temperamental schedule compiled at the time of leaving school.

**Case 6**, the last case to be quoted, is that of a girl who left school from the special class for backward girls. This is an example of general inefficiency in which guidance with after-care might have been of great service.

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*Intelligence.* Low. Absent from verbal tests. Mental age definitely below twelve years in each of several Stanford-Binet tests (full scale not given). Performance tests: mental ratio, 84.

*Manual Dexterity.* Rather poor all round.

*Temperament.* Rather negative, lacking ambition, initiative, and energy; unsociable, unco-operative, and unreliable.

*Medical Condition.* Absent from medical examination. Reported at school to be continually absent on plea of health (suggestion of appendicitis), for which nothing was done.

*Home Conditions.* Not much ascertained. Mother was never at home when visited. The girl had had two stepfathers.

*School Report.* Very poor all round. Attendance very irregular, and very few attendances had been made during the last two years.

*Desires.* The girl hoped to get into a tea factory in which her father (killed in the War) had worked.

*Recommendations.* General factory work, not highly skilled.

*Subsequent Career.* By the end of the inquiry twenty posts had been actually recorded for this girl, but there were several periods unaccounted for and a good deal of unemployed time. The length of tenure of the posts varied from half a day to ten weeks, few of them being more than three or four weeks. In one firm, where she was employed several times during rush periods, the total period of work covered about ten months. She appeared to content herself with waiting for casual employment in this firm. All the posts were naturally of an unskilled nature, and contained little, if any, prospect of promotion to anything better.

Here we have an illustration of the difficulties of dealing with industrial histories by the statistical methods to be described in the next chapter. This girl had tried a variety of unskilled posts, and, according to the information available at the time of leaving school, she ought to have been fairly successful in some of them. In grading these posts for comparative purposes, therefore, the grades A and B would always have to be given. The frequency with which she changed her posts tends, in a statistical treatment of the data, to reduce the apparent value of the A and B gradings. This does not mean, however, that the diagnosis is incorrect. A girl such as this seems likely to join eventually the class known as 'unemployable.' Clearly the

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Institute could not *recommend* that she should have frequent changes or that she should be much unemployed, but it could venture the guess that little success would attend the girl's efforts on any but simple work, and even there a change in general attitude would be required. Hence it may fairly be claimed that the frequency of change in this girl's subsequent career has confirmed the diagnosis that she was fitted only for unskilled work, although in the statistical analyses it does not appear so. Indeed, the figures in the tables (pp. 233-280) concerning boys and girls recommended for unskilled work are certainly affected throughout by those 'inefficients' who have been included in this class. Such young people are unlikely to obtain any employment not of a casual type. Their work, while they are in it, is probably quite satisfactory both to themselves and to the employer. Yet the tenure of the posts is frequently extremely brief.

### 2. GROUP STUDIES

#### (a) Nature of Studies to be Made

As for the differences between groups of cases, it will be conceded that the appropriateness of the work undertaken by any given child can, in general, be gauged by one or more of the following criteria:

1. The length of tenure of the post.
2. The employer's report upon the child's efficiency.
3. The child's liking for the work.
4. The reasons for giving up the post.

The test of the value of the vocational adviser's work<sup>1</sup> lies, accordingly, in the association between each of these criteria and the degree of congruity of the posts taken by the child with the advice given to him. If the vocational adviser's suggestions are well founded we should expect tenure of posts to be longest and efficiency in them to be highest when the agreement between the work found and that advised is closest. Further, if the methods of the Institute are better than those with which they are being compared agreement between career and advice should give better results in the case of the children of the experimental group than of the control group.

<sup>1</sup> In general, of course, and not in every single case.

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We have, however, to bear in mind that the estimate of congruity between the posts taken by the child and the advice given depends partly upon a correct classification of the posts, and partly upon their correct grading for congruity where the work taken up differs (slightly or widely) from that recommended by the adviser.

The methods of grading and classifying posts have already been described in sufficient detail (pp. 193-211) to make it clear that the criteria to be employed are largely independent of each other; any bias that may affect the classifying of employers' reports, for instance, is not likely to occur in an exactly similar manner in the grading and classifying of the posts. Consequently the fact that similar results are yielded by each of the above criteria may be regarded as very significant.

It may also be appropriate at this stage to mention that the comparisons to be drawn are not between (a) children who, after having been vocationally advised by an elaborate procedure, were *placed* in suitable employment, and (b) others who, without such advice, had to *take their chance* of finding suitable employment, but between children so advised and not so advised, *all of whom* had to take their chance of finding employment, suitable or otherwise. Hence the intrinsic suitability of the work, though an important factor in determining the results we are about to consider, is not the only factor. It will be apparent that numerous conflicting influences have been at work. Their effects are difficult to estimate, but it is clear that if greater control of these forces (other than those that may be included under suitability) could have been secured, those results which are attributable to suitability of post would have been much larger than they are.

Some indication of the care needed in arranging the data for examination may be gained from one example of the procedure adopted in these studies. To bring out more clearly the essential relationship between efficiency in a post and the adviser's estimate of its suitability, every single post held by the child has been dealt with separately. Instead of taking the child's career as a whole, contrasting total efficiency in many posts (if, indeed, this were measurable) with a corresponding composite estimate of suitability of all the posts held (if obtainable), the various portions have been dealt with post by post.

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This procedure appears to have been successful, even though some of the studies (*e.g.*, past posts, pp. 253-267, in which the suitability factor is complicated by other factors) give results which are not nearly so definite as the others. Be that as it may, it will be agreed that one constant factor underlies all these studies of careers—viz., that relationship between the individual and his work which promotes, on the one hand, liking for it, efficiency in it, and the determination to stay in it, and, on the other hand, dislike, inefficiency, and the desire to leave it as soon as possible; and this is 'suitability,' as most people regard it. Although in individual cases its influence may be reduced by the strength of other factors, in group comparisons it remains the principal *common* factor.

### (b) Rate of Change of Occupation, or Length of Tenure of Posts

Among studies of length of tenure of posts (pp. 232-267) perhaps those concerned only with children who have not changed their posts since leaving school possess the fewest complications. Where, as in certain cases, these posts have been held nearly four years a high degree of satisfaction on the part of the child may reasonably be assumed.<sup>1</sup> Table XXIV shows the proportion, as a percentage, of those in each of the six main classes of work who retained their first post throughout the follow-up period.

It will be seen that the children of the experimental group (those who received the Institute's advice) show a consistently greater tendency to remain in the same post when it is of the kind advised than when it is different. Six classes of work are shown, and in every case the percentage figures in the first column are greater than those in the third column. The children of the control group (who were not thus advised) do not show this tendency to anything like the same extent. Although the figures in the second column exceed (with one exception) those in the fourth column, the differences are relatively small.

These differences are notable in themselves, but their value is enhanced when allowance is made for disturbing factors.

<sup>1</sup> A high degree of satisfaction is, indeed, expressed in reports on these posts, and it is clear that 'inertia,' or lack of initiative, does not lead to a long tenure of post; the employer sees to that.

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TABLE XXIV

PERCENTAGE<sup>1</sup> OF CHILDREN REMAINING IN THE SAME POST SINCE LEAVING SCHOOL (CLASSIFIED BY WORK FOUND)

Class of Work Found	When the Work Found is of the Class Recommended		When the Work Found is of a Class different from that Recommended	
	Experimental Group	Control Group	Experimental Group	Control Group
Clerical . . . .	75	44	35	43
Minor clerical . .	42	43	36	36
Social . . . . .	33	19	19	15
Manual: skilled . .	28	27	18	21
semi-skilled . .	39	29	32	25
unskilled . . .	30	—	24	16

One gathers from the reports that clerical work is much sought after, whereas unskilled work offers very little attraction. Hence, quite apart from suitability, a smaller proportion of children tend to remain in the manual classes of work compared with work of the office type.<sup>2</sup> The percentages in the third column and in the fourth for the two kinds of clerical work tend, therefore, to be swollen by those children who are keen on the work and who are doing reasonably well, even though they may be better fitted for other kinds of work (skilled manual work, for instance). Conversely, the percentages in the first and second columns for the manual classes of work tend to be reduced. Hence the real differences between columns 1 and 3 and between columns 2 and 4 are greater than the observed differences. But the effect of such disturbing factors is not always equal in the two groups, experimental and control. Certain semi-skilled posts occurred in firms

<sup>1</sup> To make the tables clearer it may be added that the first and second columns of figures show the proportion of children who, having obtained a first post of the kind advised, consider it sufficiently satisfactory to keep; the third and fourth columns show the proportion of children who, having obtained a first post of a kind different from that advised, consider it sufficiently satisfactory to keep, in each of the classes of work given.

Details for separate sexes are given in Tables XXXVI and XXXVII, of which Table XXIV is a summary.

<sup>2</sup> This tendency is well seen in the average figures for length of tenure of past posts, pp. 253-267.



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offering attractive conditions of work (in one large tobacco firm especially). If a 'superior' type of child happened to be attracted by a post of this kind and found one it would be included in the third column in the case of the experimental group, because the advice would probably not favour semi-skilled work, whereas it would be included in the second column in the case of the control group, for the expression of a desire to enter such a firm would more readily become the recommendation of the conference. This is illustrative of factors which affect the differences disclosed by these analyses quite apart from the soundness of the advice offered. 'Good' children are to be found in 'inferior' posts, 'poor' children in 'superior' posts, in both the experimental and control groups; but the effects shown by the tabulations are not always equivalent because the bases of classification are not in all respects the same for both groups.

Now if the Institute's judgments of suitability were irrelevant the percentages in the first column would differ little from those in the third column. For, even though the Institute always considered the child's wish, it did not recommend a post unless the wish was thought to be well founded, and it rejected more 'wishes' than it accepted. Hence the differences in the experimental group do not merely reflect the desire of a child to remain in a post that he 'fancies'; for this desire affects the third column as well as the first column.

In the case of the control group the child's wish was rarely negatived, so that the differences between the second and fourth columns are much more likely to be due to the influence of the child's wish than are the corresponding differences for the experimental group. The conclusion, therefore, is that while these results for the control group *may* represent a real discrimination between suitable and unsuitable work, the results for the experimental group *do* indicate a successful choice of suitable work by the advisers.

More detailed studies of length of tenure are given in the next chapter, when posts held for short periods are examined. The results are, however, all in accord with this general conclusion.

Table XXIV shows how these long-tenure posts are distributed between (a) boys and girls whose abilities and temperament

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(according to the advisers) are of a kind appropriate to the work found, and (b) boys and girls whose abilities are *less* appropriate in varying degrees.

Another method of dealing with the data is to divide those children who, because they possessed certain abilities, were advised to seek a certain class of work into (a) those who kept their posts in it and (b) those who kept their posts in a different class of work. The proportions in each are shown in Table XXV.

TABLE XXV  
PERCENTAGE OF CHILDREN REMAINING IN THE SAME POST SINCE  
LEAVING SCHOOL (CLASSIFIED BY WORK RECOMMENDED)

Class of Work Recommended	When the Work Found is of the Class Recommended		When the Work Found is of a Class different from that Recommended	
	Experimental Group	Control Group	Experimental Group	Control Group
Clerical . . .	75	44	20	11
Minor clerical .	42	43	32	19
Social . . .	33	19	22	32
Manual: Skilled .	28	27	28	21
Semi-skilled .	39	29	18	16
Unskilled .	30	—	29	25

These percentages do not differ greatly from those in Table XXIV—the first two columns being, of course, identical in the two tables—but some interesting points emerge. The children to whom the Institute proposed clerical work, for instance, not only shine in clerical work (75 per cent. keep their posts), but a fair proportion (20 per cent.) keep their posts in other work, just as children of good ability may be expected to do. The children of the control group recommended for clerical work by the conference are less successful in retaining posts in this work; they are also less successful in other work. Is this possibly due to temperamental qualities not having been sufficiently considered, approval of clerical work being based on a good school record alone? Are those advised to take clerical work by the school conference more *unfitted* for other work than those who received the advice of the Institute? Or have we here the result of entering work which is not particularly desired,

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since if clerical work is strongly desired few will remain in different work for any length of time?

The detailed figures prompt a number of similar questions, but the general conclusions are as stated above. A further illustration of the differences between the individuals comprising the various sub-groups is seen in semi-skilled manual work. Only 18 per cent. (Table XXV) of those recommended by the Institute to take up this class of work manage to retain first posts in other classes of work, whereas 32 per cent. (Table XXIV) of those recommended to other classes of work retain first posts in this class. This suggests that *ability* is by no means a negligible factor. At any rate, if such differences are due to ability they show that the Institute's diagnosis of differences in ability is sound. The reader will find other comparisons in these tables pointing to the same conclusions.

### (c) Employers' Reports

We may next consider the employers' reports on the child's efficiency. Although difficulty has been experienced in interpreting employers' reports, the scale of values assigned to them (p. 200) has made possible a number of comparisons. Details are given in the next chapter (p. 267). Table XXVI summarizes the results in a form suitable for general discussion. It shows the percentage of all reports received (on posts in any given grade of congruity) which are of first and third grade or quality respectively.

In the experimental group highly satisfactory reports (first quality) occur more frequently in connexion with posts of Grades A and B than with posts of Grades D and E congruity. Conversely, reports indicating dissatisfaction (third quality) occur more frequently in connexion with posts of D or E congruity than in any others. In the tables for both boys and girls the inverse relation in third quality reports is as striking as the direct relation in first quality reports. This double relation is also shown by the children of the control group, but here the progressive increase and decrease in the two columns is not so well defined.

Generally, it may be concluded that the judgments of suitability were not far removed from the truth, so far, at least, as

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TABLE XXVI  
ANALYSIS (IN PERCENTAGES) OF EMPLOYERS' REPORTS  
ON ALL POSTS HELD

Group	Quality of Employers' Reports	Grade of Congruity <sup>1</sup>				
		A	B	C	D	E
Boys:						
Experimental group	1st quality	17	7	8	5	0
" "	3rd quality	3	7	16	19	33
Control group . .	1st quality	9	19	7	12	0
" " . .	3rd quality	3	11	11	25	50
Girls:						
Experimental group	1st quality	35	13	8	7	0
" "	3rd quality	2	5	12	18	33
Control group . .	1st quality	27	7	10	13	0
" " . .	3rd quality	4	8	9	0	100

the cases included in Table XXVI are concerned. Most of the employers' reports, however, are of the second quality (*i.e.*, 'satisfactory'), and it is difficult to say what significance to attach to these. Certainly there are far more 'satisfactory' reports than one would expect; these are discussed more fully in the next chapter. In the present comparisons only the 'good' and the 'bad' reports, which are relatively free from such disturbing factors, are considered.

Analysis of the reports on *present* posts discloses the same general association of high satisfaction with congruity with advice. These are shown in Table XXVII.

In this case also the superiority of the experimental group is shown in the change in the percentages from the A Grade of congruity to the D and E Grades. (The complete tables will be found at p. 271.)

## (d) Reports from Children

Fuller details of these reports are given in the next chapter (p. 272). Here we shall consider only the reports of the children which are 'highly satisfactory' and 'unsatisfactory' respectively.

In Table XXVIII the 'highly satisfactory' reports are analysed in their relation to posts classed according to their

<sup>1</sup> That is to say, congruity between the advice given and the work found.

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TABLE XXVII

ANALYSIS (IN PERCENTAGES) OF EMPLOYERS' REPORTS  
ON PRESENT POSTS ONLY

Group	Quality of Employers' Reports	Grade of Congruity				
		A	B	C	D	E
Boys:						
Experimental group	1st quality	19	5	8	9	—
"    "	3rd quality	3	7	3	18	33
Control group . .	1st quality	12	25	12	14	—
"    " . .	3rd quality	2	6	4	—	—
Girls:						
Experimental group	1st quality	43	16	6	4	—
"    "	3rd quality	5	2	10	15	—
Control group . .	1st quality	33	3	17	17	—
"    " . .	3rd quality	2	—	8	—	—

grade of congruity with the advice given. But in comparing these data it is, of course, necessary to take account of the proportion of *all* reports falling in each grade of congruity.

It will be observed that in the experimental group the percentage of 'highly satisfactory' reports associated with posts of Grades A and B congruity, both for boys and girls, is *larger* than the percentage of *all* reports falling in these two grades taken together. In the case of Grades C and D congruity the proportion of 'highly satisfactory' reports is *less* than the proportion of all reports. Relatively, then, the child's expression of high satisfaction is more closely associated with posts of high than with posts of low congruity with advice. In the control group there are data only for the girls, and there are no reports in Grades D and E. But if we compare Grade A with Grade C the proportions relative to those for *all* reports are less satisfactory than those found in the experimental group. But, of course, the very small proportion of posts of D congruity in the control group, as reflected in the distribution of all reports, makes direct comparison unsatisfactory. Inasmuch as the control group shows only a slight excess of 'highly satisfactory' reports in Grade A over the proportion of all reports in Grade A, the experimental group has the advantage.

Let us turn now to the 'unsatisfactory' reports. Expressions

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TABLE XXVIII

ANALYSIS (IN PERCENTAGES) OF 'HIGHLY SATISFACTORY' REPORTS FROM CHILDREN

Group	Grade of Congruity of Post with Advice				
	A	B	C	D	E
<i>Experimental Group</i>					
Percentage of 'highly satisfactory' reports					
Boys . . . . .	37	25	12.5	12.5	12.5
Girls . . . . .	37	12.5	29	21	—
Percentage of <i>all</i> reports which fall in each grade					
Boys . . . . .	14.5	25.5	40	18.5	2
Girls . . . . .	20	25.5	37.5	15	1.5
<i>Control Group</i>					
Percentage of 'highly satisfactory' reports					
Boys <sup>1</sup> . . . . .	—	—	—	—	—
Girls . . . . .	29	35	35	—	—
Percentage of <i>all</i> reports which fall in each grade					
Boys . . . . .	23	28	43.5	4.5	1
Girls . . . . .	25.5	28.5	40	5.5	.5

of dissatisfaction occur far more frequently than those of satisfaction. But, for reasons already discussed at p. 200, these cannot be taken at their face-value. The association of a dissatisfied child with a post of Grade A congruity does not necessarily imply that the judgment of its suitability for the child (indicated by the Grade A congruity with advice) was erroneous. If this were so—that is, if the advising of these children was often bad—it would be very remarkable, in view of the extent to which the criteria already examined (pp. 221-227) provide such definite evidence of the value of the advice. The figures are given at p. 229.

It appears that for the experimental group the percentage of 'unsatisfactory' reports in Grade A is *less* than the proportion of all reports in this grade, whereas the percentage of 'unsatisfactory' reports in Grade D is *about the same* as the proportion of all reports in that grade. There are special reasons<sup>2</sup> why

<sup>1</sup> Only one 'highly satisfactory' report was received from the boys in the control group.

<sup>2</sup> Namely, the fact that if the child obtained a post akin to what he wanted (Grade A) he would be more likely to say that he liked it.

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TABLE XXIX

ANALYSIS (IN PERCENTAGES) OF 'UNSATISFACTORY' REPORTS  
FROM CHILDREN

Group	Grade of Congruity of Post with Advice				
	A	B	C	D	E
<i>Experimental Group</i>					
Percentage of reports expressing dissatisfaction					
Boys . . . . .	9.2	25	44	17	—
Girls . . . . .	11.8	23.6	47	15	1.5
Percentage of all reports which fall in each grade					
Boys . . . . .	14.5	25.5	40	18.5	2
Girls . . . . .	20	25.5	37.5	15	1.5
<i>Control Group</i>					
Percentage of reports expressing dissatisfaction					
Boys . . . . .	14	29	50	7	—
Girls . . . . .	21	18	49	11	—
Percentage of all reports which fall in each grade					
Boys . . . . .	23	28	43.5	4.5	1
Girls . . . . .	25.5	28.5	40	5.5	.5

'unsatisfactory' reports are less likely to occur in Grade A of congruity in the control group. Nevertheless, the percentage of 'unsatisfactory' reports in Grade A, as compared with the percentage of all reports, is on the whole greater than in the experimental group; and though the proportion in Grade D is, perhaps for the same reasons, greater than the proportion of all reports in this grade, it is necessary to remember that the cases of D congruity in the control group are 'highly selected.'

The general conclusion, then, is that reports expressing satisfaction tend to be associated more often with posts of high congruity with advice than with posts of low congruity, and *vice versa* for reports expressing dissatisfaction, both in the experimental group and in the control group.

## (c) Reasons for Leaving

The incidence and value of these are so affected by extraneous factors that it is not surprising that this criterion affords less definite evidence of the value of the Institute's advice than is afforded by any of the other criteria. Full details are given in

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Chapter IX, to which the reader is referred for a discussion of the difficulties and results.

### (f) General Results of Analytic Studies of Follow-up Data

The value of the tables which have just been considered, and of the more detailed tables (Chapter IX) from which they are derived, depends upon their freedom from bias. As regards individual case studies, these have to be 'selected' from among a larger number, and it may be a matter of opinion as to whether or not they are typical of the whole. In dealing with a large number of cases it has, of course, been necessary to group them to facilitate comparison. But no attempt has been made to 'select' groups which would illustrate some special point, as, for example, the positive value of advice in those clear cases in which it is related to success, or, conversely, the failure of the advisers to discover the *real* abilities of the child in those cases in which failure occurs. It may be worth while to try to do this, but obviously the selection of the groups of cases will be difficult to arrange. In this account, therefore, no attempt has been made to proceed beyond the natural groupings formed (a) by the class or type of work *recommended* to the child (as typifying the 'nature' of the child) and (b) by the class or type of work *found* by him. If the after-care of these children had been such as to exercise some pressure to find work of the kind advised, possibly the results of some of these groupings would be affected by the extent to which work was more successfully found in one occupation than in another. But, considering the random way in which posts were taken and the general indifference to the advice given, it is reasonable to conclude that no special bias of this kind enters into the groupings. The disturbing factors that are discoverable seem, without exception, to act in a way to lessen the differences that it was hoped to discover between groups of different kinds. Consequently the results of analysis are far more significant than they would be if circumstances favourable to them were found to be frequently operative. Perusal of the detailed analyses of Chapter IX, as well as the preliminary account in Chapter VII, will convince the reader of the truth of this.

If this be granted belief in the following conclusions naturally follows.



## GENERAL RESULTS

1. Boys and girls whose work is in closest agreement with that advised (*a*) tend to keep their posts longer (Tables XXIV, XXV, pp. 221-225), (*b*) tend to give greater satisfaction to their employers (Tables XXVI, XXVII, pp. 225-227), and (*c*) tend to be more satisfied themselves (Tables XXVIII, XXIX, pp. 228, 229), than when their work is less closely related to that advised.

2. In regard to recommended occupations the boys and girls of the experimental group (*a*) tend to keep them longer (pp. 221-225), (*b*) tend to give satisfaction to employers more often (pp. 225-227), and (*c*) tend to be more often satisfied themselves (228, 229), than do boys and girls of the control group; which indicates the greater helpfulness of the Institute's procedure of advising compared with that of the school conference.

3. This kind of result occurs only when a boy or a girl is 'suited' to his or her work—*i.e.*, when there is a real vocational adjustment. It therefore indicates that vocational advising, if acted upon, will promote better vocational adjustment. This proves that vocational guidance *can* improve the choice of occupations and promote greater success in them.

## CHAPTER IX

### DETAILED STUDIES OF THE FOLLOW-UP DATA

CERTAIN general conclusions have already been drawn, but the reader who is interested in the critical evaluation of the follow-up data will probably desire the fuller discussion which is now to be given of them. The order of the topics is the same as in the last chapter.

#### I. RATE OF CHANGE OF OCCUPATION, OR LENGTH OF TENURE OF POST

##### (a) Post held at Time of Last Inquiry as Basis of Classification<sup>1</sup>

Tables XXX and XXXI show the average number of posts held by various groups of children classified according to the congruity with the advice given (pp. 197-199) of the post they were still holding at the last inquiry, and according to the type of work (pp. 193-197) which they were originally advised to seek, both for the experimental group (indicated by 'Exp.' in the tables) and for the control ('Con.') group. Many comparisons may be made.

It will be observed, for instance, that those boys who were recommended by the Institute to take work in Class I (clerical work) and who at the time of the last inquiry were holding a post of A congruity—usually a post in the class recommended (see p. 205)—have had, on the average, 1.25 posts each; whereas boys similarly advised, whose post at the last inquiry was only of C congruity, have had 4.5 posts each—more than *three and a half times* as many.<sup>2</sup> The corresponding figures for the girls (Table XXXI) are 1.43 posts and 2.25 posts.

<sup>1</sup> This is not the most satisfactory basis of analysis because the results are difficult to interpret. But it was used in earlier work, and certain points arising out of its use deserve attention. More direct evidence of the association between congruity of post with advice and length of tenure is given in Table XLIV *et seq.*

<sup>2</sup> The number of posts of D congruity are, however, much fewer, but here the influence of the attractiveness of this work to a certain type of child (p. 222) may be showing itself. In any case, in tables of this sort frequent exceptions to the general tendencies are bound to occur.

TABLE XXX

AVERAGE NUMBER OF POSTS HELD (CLASSIFIED BY THE GRADE OF CONGRUITY OF THEIR PRESENT POSTS): BOYS

M = Average number of posts.

N = Number of cases from which M is derived.

Class of Work Recommended	Grade of Congruity of Present Post											
	A		B		C		D		E		Unclassifiable	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
I												
M . . .	1.25	1.73	4.00	2.84	4.50	2.60	1.75	—	—	—	—	3.00
N . . .	8	16	2	6	4	10	4	—	—	—	—	1
II												
M . . .	1.50	1.91	1.83	1.00	2.90	3.17	2.71	2.00	—	—	—	—
N . . .	4	11	6	2	10	6	7	1	—	—	—	—
III												
M . . .	4.00	2.00	2.58	1.33	4.33	3.86	3.71	1.50	—	—	—	—
N . . .	3	4	12	6	6	7	2	2	—	—	—	—
IV												
M . . .	1.83	1.82	3.83	3.38	2.86	4.17	2.00	3.00	—	—	4.00	4.00
N . . .	6	11	6	13	7	17	2	1	—	—	1	1
V												
M . . .	1.50	1.33	3.00	2.29	3.13	4.12	4.00	2.00	—	—	—	3.00
N . . .	4	6	13	14	15	16	3	1	—	—	—	1
VI												
M . . .	1.70	3.33	2.95	3.20	3.16	3.25	2.17	3.50	—	—	—	3.00
N . . .	10	3	18	10	25	10	6	2	—	—	—	1
VII												
M . . .	—	—	2.80	2.00	3.64	3.80	1.50	—	2.00	—	—	10.00
N . . .	—	—	10	3	11	4	2	—	1	—	—	1
VIII												
M . . .	1.33	2.00	3.50	2.00	2.50	2.33	3.50	2.00	2.00	4.00	3.00	—
N . . .	3	1	6	2	6	3	2	1	1	1	1	—
IX												
M . . .	—	—	1.67	—	2.00	3.00	2.89	—	—	1.00	2.00	—
N . . .	—	—	3	—	4	2	9	—	—	1	1	—
Unclassifiable												
M . . .	—	—	—	—	—	—	—	—	—	—	—	5.26
N . . .	—	—	—	—	—	—	—	—	—	—	—	31
Average for all classes												
M . . .	1.73	1.84	2.91	2.78	3.12	3.71	2.82	2.38	2.00	2.50	3.00	5.08
N . . .	37	49	68	50	82	78	39	8	2	2	3	36
Percentage of A or B posts in total												
Total number of posts . . .	84	78	61	72	21	23	22	32	25	20	11	—
	64	90	198	139	256	289	110	19	4	5	9	183
Incomplete cases												
M . . .	4.67	2.67	3.40	5.11	5.72	6.00	1.13	3.00	—	—	6.50	5.92
N . . .	3	3	5	9	14	15	8	1	—	—	26	13
Average for all classes including incomplete cases												
M . . .	1.95	1.88	2.95	3.13	3.50	4.05	3.04	2.44	2.00	2.50	5.00	5.31
N . . .	10	52	73	59	96	93	47	9	2	2	7	49
Percentage of A or B posts in inclusive total												
Total number of posts . . .	78	77	61	67	22	22	13	27	25	20	14	—
	78	94	215	155	336	379	113	22	4	5	35	260

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In the case of the children of the control group the boys show 1.75 posts against 2.6 posts, the girls 1.71 posts against 3 posts, for the same degrees of congruity.

Similar comparisons throughout the tables, for each type of work recommended, indicate that, generally, children holding present posts of A or B congruity have had fewer posts than children holding present posts of C, D, or E congruity. In some cases the differences are not large, but there is a consistent increase in the number of posts as the degree of conformity with the advice given becomes less.

The averages over the whole table (taken as indicating the general trend of the figures) reveal, for example, that boys in the experimental group holding posts of A congruity have had 1.73 posts, whereas those holding posts of C, D, or E congruity have had 3 posts; for the control group the averages are 1.84 posts against 3.55 posts.

Corresponding averages for girls are: experimental group, 1.63 posts and 2.58 posts; control group, 1.87 posts and 3.3 posts.

The percentage in excess ranges from 52 per cent. to 92 per cent.: in other words, children who at the time of the last inquiry were *in work of low congruity have changed their work*

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### GENERAL NOTES ON TABLES

In the tables given in this chapter the classes of work for boys are: I, clerical work; II, minor clerical work; III, social work; IV, skilled work (printing, bookbinding, and leatherwork); V, skilled work (furniture-making and upholstery); VI, skilled work (engineering and metal-work); VII, skilled work (heavy constructional work); VIII, semi-skilled work; IX, unskilled work. For girls the classes are: I, clerical work; II, minor clerical work; III, higher-grade 'social' work; IV, lower-grade 'social' work; V, skilled manual work; VI, semi-skilled work; VII, unskilled work.

In this and in all subsequent tables posts of a week's duration or less have been omitted. Such posts give no satisfactory indication of vocational fitness.

In all tables in which figures are given for all boys or girls, irrespective of recommendation, it will be noticed that these tables are not exactly the sum of the figures given for the boys or girls recommended for each class respectively. This is due to the fact that some individuals occurred in more than one class of recommendation, so that the figures for the sums of the separate classes would have included such individuals more than once. The necessary correction has been made for this in the total lines.

This correction is important, since it is the children who were recommended for several classes of work who had all-round ability and who were likely, therefore, to do well in any work they might take up. Since several types of work had been considered equally suitable, the chances of the work they held being considered as of Grade A suitability were higher than in other cases, and their chances of success in any work were also higher. The error arising from their multiple inclusion in the total would therefore show too high a degree of success (on the average) in work of Grade A suitability.

Since it seldom happened that more than one recommendation was made for a child in the control group, this error, if not corrected, would have affected the experimental group more than the control.

The tables also show incomplete cases separately, so that the reader may see for himself how these differ from the complete cases. It is questionable whether their inclusion in average figures gives a truer result, because the disturbing and irrelevant factors are most potent in these extreme cases. The comparisons in the text exclude these cases. Their inclusion 'blurs' the data in some respects but does not affect the general conclusions already reached (Chapter VIII).

TABLE XXXI

AVERAGE NUMBER OF POSTS HELD (CLASSIFIED BY THE GRADE OF CONGRUITY OF THEIR PRESENT POSTS): GIRLS

M = Average number of posts.

N = Number of cases from which M is derived.

Class of Work Recommended	Grade of Congruity of Present Post											
	A		B		C		D		E		Unclassifiable	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
I												
M . . .	1.43	1.71	1.00	3.30	2.25	3.00	2.50	—	—	—	1.00	—
N . . .	14	14	1	7	4	2	2	—	—	—	1	—
II												
M . . .	1.00	—	—	—	2.61	—	5.67	—	—	—	—	—
N . . .	2	—	—	—	13	—	3	—	—	—	—	—
III												
M . . .	1.57	1.50	1.62	4.67	3.36	—	2.50	—	—	—	—	—
N . . .	7	6	8	3	10	—	2	—	—	—	—	—
IV												
M . . .	1.80	—	2.60	—	2.50	2.71	2.50	2.50	3.50	—	—	—
N . . .	4	—	10	—	14	7	10	2	2	—	—	—
V												
M . . .	1.67	2.10	2.50	2.59	1.76	3.05	3.00	9.50	5.00	—	—	3.00
N . . .	18	20	22	27	25	36	5	5	1	—	—	1
VI												
M . . .	1.70	2.09	2.60	2.89	2.56	3.74	3.25	1.00	—	—	4.50	—
N . . .	10	11	15	9	16	19	4	1	—	—	4	—
VII												
M . . .	1.86	—	2.00	2.50	1.75	3.00	2.75	1.00	2.00	—	2.00	—
N . . .	7	—	5	2	4	4	8	1	1	—	1	—
Unclassifiable												
M . . .	—	—	—	—	—	—	—	—	—	—	—	3.04
N . . .	—	—	—	—	—	—	—	—	—	—	—	28
Average for all classes												
M . . .	1.63	1.87	2.39	2.87	2.37	3.21	3.00	4.33	3.50	—	4.50	3.04
N . . .	52	47	52	47	70	66	32	6	2	—	4	29
Percentage of A or B posts in total												
Number of posts . . .	85	88	64	69	12	23	10	23	14	—	40	—
	85	88	124	135	166	212	96	26	7	—	20	88
Incomplete cases												
M . . .	5.70	3.50	5.70	4.80	4.70	4.25	5.33	2.00	4.00	—	5.75	5.33
N . . .	10	6	10	15	10	18	6	2	2	—	4	3
Average for all classes including incomplete cases												
M . . .	2.29	2.06	2.92	3.34	2.66	3.37	3.37	3.75	3.75	—	5.13	3.25
N . . .	62	53	62	80	78	38	8	3	4	—	8	32
Percentage of A or B posts in inclusive total												
Number of posts . . .	70	83	57	62	15	21	11	23	13	—	37	—
	142	109	181	207	213	265	128	30	15	—	41	104

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*from one and a half times to twice as often as those who were in work of the highest congruity.*<sup>1</sup>

What is the meaning of this result? It is not easily seen how or why the appropriateness of the post the child is now holding (supposing this to be equivalent to the congruity of the post with the advice) is related to the number of posts he has had previously. But there is a connexion between them.

In the first place, we may take the number of posts previously held as a rough indication of the child's satisfaction with the posts he has found. If he does not like a post, if he is not well adjusted to the nature of the work or to the conditions under which the work is carried on, or if he is not satisfied with the wages, he will leave it. On the other hand, the attractiveness or the appropriateness of the work will reduce the tendency to change. So that, over all, the occurrence of few posts indicates relative suitability of one or more of them, while the occurrence of many posts suggests their greater general unsuitability.

Now the posts held at the time of the last inquiry are of two kinds: some have been held continuously since the child left school; others represent the post in which the child has settled down, temporarily at least, this being (in general) the best post he has been able to find. Change of post is not usually a progression from low to high intrinsic suitability. Many factors enter to prevent such a sequence. But there seems no reason to suppose that these factors operate more powerfully for one child than for another in work of the same class.<sup>2</sup>

Further, children changing posts appear to pass from posts of one grade of congruity to other posts of the *same* grade. (Experience in one occupation seems to be a greater recommendation in applying for a post in that occupation than in applying for one in another.) A rough measure of the extent of this is provided in Tables XXX and XXXI by the percentage of posts of A and B congruity in the total in each column (shown as a percentage two lines below the averages). Thus, in Table XXX, 84 per cent. of the posts held by boys of the experimental group now in work of A congruity proved to have been of A or B congruity, whereas only 22 per cent. of

<sup>1</sup> It will be noticed that the differences are greater in the control group than the experimental group. This is explained at pp. 237-238.

<sup>2</sup> In work of different types, however, their importance will vary, and for this reason it is necessary to keep types of work separate.

the posts held by those boys now in work of D congruity were of these high grades. Corresponding figures for girls (Table XXXI) are 85 per cent. and 10 per cent. If these proportions had been reversed—if children in C or D posts at the last inquiry had had a high proportion of A and B posts in their previous posts with the same number of changes—the implication would be that the vocational advice offered had been erroneous. Similarly, if the children holding posts of D congruity had had a *small* number of previous posts, but a high proportion of them of A or B congruity, the conclusion would be that the advice was sound. Influences of this kind may be operative in Tables XXX and XXXI in those cases where the proportion of posts of A and B congruity previously held remains relatively high and the total number of posts previously held relatively low. (For instance, in Table XXX posts of D congruity in the experimental group show an average of 2.82, 22 per cent. being of A or B Grades; whereas in the control group a smaller average, 2.38, contains 32 per cent. of A or B posts.)

Both in the experimental group and in the control group there is a tendency for posts in high congruity with the advice given to be kept longer than those in low congruity, but on the whole it is more marked in the experimental group. This is not shown directly in Tables XXX and XXXI, but may be judged from comparisons in which the proportions of posts of high congruity are taken into account. For instance, in Table XXXI girls of the experimental group in work of A congruity had an average of 1.63 posts, whereas the control group girls had an average of 1.87. The percentages of posts of A and B congruity were 85 per cent. and 88 per cent. respectively. If these percentages were 100 the true averages would show a somewhat larger difference than 0.24, the actual difference between the averages given. In one or two cases, however, the differences would be reduced (*e.g.*, columns A and B, Table XXX). Moreover, in dealing with columns D and E the adjustments must be made in the reverse direction to express what the average number of posts would be if there were *no* posts of A or B congruity among them. But here we encounter the difficulty of knowing whether the small proportion of posts of A and B grades produced an effect equivalent to their amount. If 80 per cent. of the posts which a child has had are relatively

unsuitable and show a short average tenure it is probable that any occasional posts of greater intrinsic suitability which have been held by him may have less chance of proving their suitability than they would have when held by a child whose posts have been fewer in number and of higher suitability.

A further point in connexion with posts of low congruity with advice is that there were far fewer of these posts in the control group than in the experimental group. It has already been explained (p. 206) that gradings of D and E for congruity with advice could be made in the control group only in the few cases in which some special evidence of unsuitability was forthcoming. Generally, in the control group, the value of the C gradings (and perhaps of the B gradings also) is reduced by the inclusion of some cases that should have been D or E, while that of the D grades is increased by the exclusion of doubtful cases. In other words, the gradings D and E for the control group are 'highly selected,' and are less subject to error caused by faulty diagnosis in the first instance than are the gradings of the experimental group.

Comparisons between the sub-classes in Tables XXX and XXXI mean little because the classes of work in which the previous posts were held are not indicated. In such a complex set of data the differences between the experimental and the control group are not readily discoverable, but when, as in Tables XXXIV to XXXIX, we concern ourselves with posts held continuously since leaving school these differences are more clearly seen, and the superiority of the advice given to the experimental group becomes evident.

It seems justifiable, however, to say that a post which is in congruity to the degree of A or B with the advice offered is more likely to be retained than a post in which the congruity with advice is less. This is perhaps more marked in the case of the A posts than the B posts. But if it be recalled under what variable circumstances the latter grading was given this will create no surprise. In any case, it is not to be expected that conditions of employment will ever be such that every post of high intrinsic suitability will be kept; but in general, if the antecedent diagnosis of suitability be correct, the value of vocational advice will, at the lowest estimate, be equal to that which ordinarily accrues from the harmony of the worker with his work.



## DETAILED STUDIES

A result such as this gives confidence to the vocational adviser, in that it shows that his advice is founded on the essential and important factors in vocational adjustment. Even though, in particular cases, his advice may be nullified by circumstances beyond his control, the fact remains that whenever the fundamentals of vocational adjustment come into operation the psychologist's study of the child discloses factors which have a powerful influence in success.

### (b) Post most frequently held as Basis of Classification

Before turning to the study of the cases of unbroken tenure of a single post one or two minor points may be considered. In reviewing the analysis of the previous section the question arises as to what differences would appear if, instead of the post held at the last inquiry, the tables were based on some kind of 'composite' showing the congruity with the advice given of *all* the posts held. The best way of doing this appeared to be to grade each post for congruity with advice and then to take the most frequently appearing grade as the basis of classification. If two grades of post were held in equal numbers the allocation was determined by the total time spent in posts of each grade.

In view of the tendency to keep to posts of one grade this analysis, in most cases, will show how the congruity of the *majority* of the posts held by the child is related to the rate of change. The results for boys are given in Table XXXII.<sup>1</sup> There is so little difference between them and those already discussed in Tables XXX and XXXI that no further comment is needed. It is clear that the higher the grade of congruity with advice the smaller is the number of posts.

### (c) The Influence of the Nature of the Work on the Rate of Change

The average number of posts for each grade of congruity with advice is not the same for each class of work, because some classes of work encourage longer tenure by their intrinsic attractiveness. This point arises in connexion with almost every comparison to be drawn and will frequently be referred to.

Another feature of these tables, however, is the relatively

<sup>1</sup> In view of the results a table for girls was not prepared.

TABLE XXXII

AVERAGE NUMBER OF POSTS HELD (CLASSIFIED BY THE GRADE OF CONGRUITY OF WORK MOST FREQUENTLY APPEARING IN THE POSTS HELD BY THE INDIVIDUAL): BOYS

M = Average number of posts.

N = Number of cases from which M is derived.

Class of Work Recommended	Grade of Congruity occurring most frequently											
	A		B		C		D		E		Unclassifiable	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
I												
M . . .	1.25	1.82	3.67	2.00	3.60	2.84	2.00	—	—	—	—	3.00
N . . .	8	17	3	3	5	12	2	—	—	—	—	1
II												
M . . .	2.43	1.80	1.00	1.00	2.67	4.20	2.57	5.00	—	—	3.00	—
N . . .	7	10	3	2	9	5	7	3	—	—	1	—
III												
M . . .	4.00	2.00	2.50	1.33	4.30	3.86	3.00	1.50	—	—	—	—
N . . .	3	4	10	6	10	7	5	2	—	—	—	—
IV												
M . . .	2.14	2.80	3.25	3.56	4.16	1.00	—	—	—	—	—	—
N . . .	7	12	5	12	9	19	1	—	—	—	—	—
V												
M . . .	2.00	1.00	3.20	3.12	3.00	3.93	3.50	2.00	—	—	—	—
N . . .	5	5	15	17	13	15	2	1	—	—	—	—
VI												
M . . .	1.70	3.60	3.17	2.78	2.95	3.40	2.29	3.50	—	—	—	3.00
N . . .	10	5	23	9	19	13	7	2	—	—	—	1
VII												
M . . .	—	—	2.22	2.00	4.09	5.00	—	2.00	—	—	—	—
N . . .	—	—	9	3	11	5	3	1	—	—	—	—
VIII												
M . . .	1.54	2.00	1.50	2.00	3.63	2.33	2.75	2.00	—	4.00	3.00	—
N . . .	4	2	2	2	8	3	4	1	—	1	3	—
IX												
M . . .	—	—	2.00	—	1.67	3.00	2.89	3.00	—	1.00	2.00	—
N . . .	—	—	4	—	3	1	9	1	—	1	1	—
Unclassifiable												
M . . .	—	—	—	—	—	—	—	—	—	—	—	5.16
N . . .	—	—	—	—	—	—	—	—	—	—	—	31
Average for all classes												
M . . .	1.98	1.94	2.87	2.69	3.22	3.72	2.63	3.20	2.00	2.50	2.75	3.03
N . . .	43	51	68	48	79	79	38	10	1	2	4	33
Percentage of A or B posts in total	79	80	69	81	17	19	10	16	0	20	9	—
Total number of posts . . .	85	99	195	129	254	294	100	32	2	3	11	166
Incomplete cases												
M . . .	4.67	4.25	3.60	3.71	5.09	6.47	5.70	3.50	—	—	5.00	5.92
N . . .	3	4	5	7	11	15	10	2	—	—	5	13
Average for all classes including incomplete cases												
M . . .	2.15	2.11	2.92	2.82	3.44	4.16	3.27	3.25	2.00	2.50	4.00	3.28
N . . .	46	55	73	55	90	94	48	12	1	2	9	46
Percentage of A or B posts in inclusive total . . .	73	79	69	77	16	18	13	15	0	20	14	—
Total number of posts . . .	99	116	213	155	310	391	157	39	2	5	36	243

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large number of posts of C congruity. It might be supposed that the average number of posts of C congruity is swollen by the inclusion of posts of a routine (and sometimes temporary) nature, C\* being the grade usually given to these (*cf.* p. 199). To test this supposition separate analyses of routine and non-routine posts have been made of the data for the boys. Whether the classification is based upon the grade of congruity most

TABLE XXXIII

NUMBER OF POSTS OF C AND C\* CONGRUITY: BOYS

## (a) Experimental Group

(i) *Classified according to Grade of Congruity most frequently appearing*

—	I	II	III	IV	V	VI	VII	VIII	IX	Total
C (mean) .	1.50	2.67	4.17	3.33	3.25	2.87	4.40	3.17	1.67	3.17
C* (mean) .	5	—	4.5	4	2.25	3.25	1	8	—	3.8

(ii) *Classified according to Grade of Congruity of Present Post*

—	I	II	III	IV	V	VI	VII	VIII	IX	Total
C (mean) .	4.33	2.78	4.5	3.2	3.44	3.19	3.89	2.6	2	3.3
C* (mean) .	5	—	4	2	2.4	3	2.5	—	—	2.9

## (b) Control Group

(i) *Classified according to Grade of Congruity most frequently appearing*

—	I	II	III	IV	V	VI	VII	VIII	IX	Total
C (mean) .	2.38	4.20	5.66	4.11	3.93	3.57	5	3	3	3.7
C* (mean) .	3.75	—	5	4.5	4	1	—	—	—	3.8

(ii) *Classified according to Grade of Congruity of Present Post*

—	I	II	III	IV	V	VI	VII	VIII	IX	Total
C (mean) .	2.72	5.4	3.66	4.06	3.93	3.21	3.8	3	3	3.7
C* (mean) .	2.34	—	5	6	7	3.5	—	—	—	4

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frequently appearing among the graded posts or upon the grade of congruity of the present post, the results (Table XXXIII) show that the separation of the routine posts makes very little difference in the totals, though in particular cases the differences are appreciable.

Conclusions drawn from comparisons of totals in which C posts are taken into account will not be invalidated by the inclusion of routine and temporary posts. Generally, however, the most important results accrue from the contrast of Grades A and B, taken separately or together, with Grades D and E, but sometimes in contrasting the progressive increase or decrease in the figures Grade C is also included.

### (d) Posts held continuously since leaving School considered separately

Perhaps the most direct evidence of the relation between the judgment of the vocational adviser and the efficiency of the individual in his work is to be gained from a study of the posts held continuously since leaving school. Tables XXXIV and XXXV show the proportion of posts so held, arranged according to the class of work found and the class of work recommended. Thus reading horizontally, in each class of work, the number who kept one post throughout the period of inquiry is shown as a percentage of those who had the same opportunity in relation to their abilities (indicated by the class of work recommended to them). Tables XXXVI, XXXVII, XXXVIII, and XXXIX show them arranged according to the class of work recommended and the congruity of the work found with that recommended.

In Tables XXXIV and XXXV the horizontal lines show how many children in each class of work, and what proportion (as a percentage) of those who *started* in that class of work, retained one post throughout the period of inquiry. The vertical columns show how these children were advised, and therefore afford, for the experimental group if not for the control group, a rough indication of the psychological make-up of the child.

We should expect the highest proportion of these long-tenure posts to occur when the work found agrees with the work recommended, the figures for which are in heavy type. There is a definite tendency for this to occur. Both boys (60 per cent.)

TABLE XXXIV

PERCENTAGE AND NUMBER OF BOYS WHO HAVE REMAINED IN THE SAME POST SINCE LEAVING SCHOOL

Class of Work Found	Class of Work Recommended																		
	I		II		III		IV		V		VI		VII		VIII		IX		Unclassifiable
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	
I Percentage Number	60	44	33	—	33	—	25	—	67	—	50	33	—	—	—	—	—	—	—
II Percentage Number	—	—	40	48	25	100	—	29	25	67	33	25	—	—	—	—	—	—	—
III Percentage Number	—	—	4	3	1	3	—	—	—	—	1	2	—	—	—	—	—	—	—
IV Percentage Number	50	9	14	33	28	21	—	29	—	—	14	14	20	—	—	—	—	—	—
V Percentage Number	—	—	20	—	—	—	25	31	25	14	—	33	—	—	—	—	—	—	—
VI Percentage Number	—	—	—	50	—	—	—	—	33	46	—	—	—	—	—	—	—	—	—
VII Percentage Number	—	—	20	—	10	33	25	37	50	—	28	9	14	—	—	—	—	—	—
VIII Percentage Number	—	—	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
IX Percentage Number	—	—	33	35	—	100	100	—	—	17	27	14	25	—	—	—	—	—	—
Unclassifiable Percentage Number	—	—	—	—	—	—	—	—	33	—	33	—	—	—	—	—	—	—	—
Percentage Number	9	6	23	10	9	43	18	23	26	13	23	22	16	33	23	14	24	25	—

The lines labelled percentage show the percentage of all first posts retained in the class concerned.

In this and the following tables a dash represents a class in which no posts were retained throughout the whole period, though some first posts may have been held in the class and given up. The number of posts held in all classes in which none were retained can be estimated from the percentages at the foot of the table.



and girls (90 per cent.) show a high tendency to remain in clerical work when it is the work advised. A similar tendency to remain in clerical work is, however, shown, as revealed in all tables, by both sexes even when it is not the work advised. But the most successful are those who were advised or who might have been advised to seek this type of work. Less weight must, of course, be attached to the single cases which give percentages of 100 in Tables XXXIV and XXXV than to groups of cases. To take as another example unskilled work among girls (Table XXXV, Class VII), six of those who kept one post were girls who were advised to seek this type of work, whereas eight others who kept one post were advised to try skilled work (Class V). Here, no doubt, we have an example of successful work in an unskilled post by those who are capable of attempting more difficult work, for it is known (p. 207) that there are some attractive posts for girls in work that ranks as unskilled.<sup>1</sup>

From Table XXXIV it may be seen that of boys remaining in semi-skilled work (Class VIII) six were advised to seek work in Classes VI or VIII, whereas two were advised to seek minor clerical work. Similar comparisons may be made throughout the two tables, and the control and experimental groups may be directly compared. But circumstances tending to confuse the issue should be borne in mind. Boys, for instance, to whom skilled work (Class V) was proposed might be highly intelligent as well as practical, and, having found, say, clerical work might be tempted by good prospects to stay in work in which they were giving satisfaction.

Comparisons within the columns show how children of a particular type (as indicated by the class of work recommended) have succeeded in work of the same and of a different class. For example, in the case of the experimental group, children

<sup>1</sup> It may be thought that the mention of instances such as these savours of 'question-begging,' in that by saying "capable of attempting more difficult work" the correctness of the Institute's diagnosis is assumed. This is not so. The experiment was carried out to discover how far such judgments of ability are sound. Obviously cases may occur in which children of high ability will give satisfaction in posts requiring only low ability. Such cases do not prove the judgments to be right, but they do not prove them to be wrong. It is legitimate to point out where such instances appear to occur in these studies. For if many of the exceptions to the general principle appear in association with facts that can be explained, their significance as exceptions is much reduced. Moreover, differences between the abilities needed for different classes of work exist quite apart from *judgments* of the abilities of individuals.

who were recommended for semi-skilled work (Class VIII (boys), Class VI (girls)), success in work of the same class is represented by percentages of 43 and 38 respectively, whereas success in minor clerical work (Class II) is shown by percentages of 20 and 50.

Some idea of the difference between success in the class recommended and success in all *other* classes may be gained by comparison of the figures in heavy type with those at the foot of Tables XXXIV and XXXV. Thus, in Class II 40 per cent. of boys recommended to this class succeeded, whereas only 23 per cent. of boys from other classes did so. In Class III all the girls recommended succeeded, against 37 per cent. of girls from other classes, and so on.

The general trend of the comparisons may be seen conveniently in Tables XXXVI and XXXVII, in which Tables XXXIV and XXXV are summarized. In Table XXXVI the relation between the type of work found and that recommended is shown. The columns headed *X* show the proportion who retained the work when it was the kind recommended. Those headed *Y* show the proportion who retained the work although they were advised to seek work of a different kind. (These percentages summarize the *rows* of Tables XXXIV and XXXV.) A further summary of this table was given in the previous chapter (Table XXIV), and what was said there applies here.

Table XXXVI shows the consistency of the association of the adviser's recommendation with the highest proportion of long-tenure cases in any given class. In the boys' part of the table the percentages in the first column of figures exceed those in the third column in almost every instance; in the girls' part of the table the same is true with two exceptions. In neither part of the table do the percentages in the second column so consistently or so greatly exceed those in the fourth column. In other words, association of advice with long tenure of post is less marked in the control group than in the experimental group.

In Table XXXVII a different, but equally interesting, summary shows how the proportion retaining work in the class recommended compares with the proportion who retain work in classes other than that recommended. (These percentages summarize the *columns* of Tables XXXIV and XXXV.)



TABLE XXXVI

RELATION OF WORK FOUND TO WORK ADVISED: PERCENTAGE OF  
CHILDREN WHO HAVE REMAINED IN THE SAME POST SINCE  
LEAVING SCHOOL

Class of Work <sup>1</sup> found on leaving School	Boys				Girls			
	X When Same Class of Work was advised		Y When a Different Class of Work was advised		X When Same Class of Work was advised		Y When a Different Class of Work was advised	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
I	60	44	43	17	90	44	17	62
II	40	43	33	38	50	—	50	25
III	33	21	14	17	100	50	—	—
IV	25	31	12	14	14	—	37	11
V	33	46	6	42	30	26	26	7
VI	26	9	16	22	38	36	37	35
VII	—	—	50	—	35	—	29	19
VIII	43	11	26	15				
IX	—	—	7	—				

<sup>1</sup> For meanings of Class I, etc., see note on p. 234.

TABLE XXXVII

RELATION OF WORK ADVISED TO WORK FOUND: PERCENTAGE OF  
CHILDREN WHO HAVE REMAINED IN THE SAME POST SINCE  
LEAVING SCHOOL.

Class of Work recom- mended on leaving School	Boys				Girls			
	X When Same Class of Work was found		Y When Different Class of Work was found		X When Same Class of Work was found		Y When Different Class of Work was found	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
I	60	44	9	6	90	44	29	50
II	40	43	23	19	50	—	45	—
III	33	21	9	42	100	50	37	25
IV	25	31	18	23	14	—	23	27
V	33	46	26	13	30	26	44	28
VI	26	9	23	22	38	36	21	17
VII	—	—	16	33	35	—	33	—
VIII	43	11	13	14				
IX	—	—	24	25				

In comparing the figures under *X* with those under *Y* for both the experimental group and the control group it is apparent that there are factors other than suitability to be considered. If, as has been indicated before, clerical work attracts more than other kinds of work, the proportion keeping one post in clerical work would naturally be greater than the proportion in other work. Conversely, where the work is unattractive (such as unskilled work in the case of boys) the proportion trying to keep other work might very well be greater than the proportion anxious to retain an unskilled post. This is seen in Class IX in Table XXXVII; those recommended for unskilled work in both the control group and the experimental group manage to retain about one quarter of the first posts they have sought in other classes of work, but have kept no unskilled posts.

The general trend of the figures in Tables XXXVI and XXXVII may be expressed in a still more concise form as follows. For the whole of the experimental group 36 per cent. of those whose first post was in the class of work recommended kept it throughout, whereas 25 per cent. of those whose first post was in a class of work different from that recommended retained it throughout. For the control group corresponding figures are 30 per cent. and 22 per cent.

The real differences between the percentages in the two groups compared must be considerably larger than the apparent differences, because the larger percentage expresses only the suitability and the attractiveness of the class of work the child is recommended to try, whereas the smaller percentages do not merely express the inferior suitability of the various classes of work not recommended, over a considerable range of inferiority, but are influenced also by the attractiveness of the classes of work not recommended (which, in regard to three classes of work at least, is greater than that of the recommended work). The latter of these two factors will tend to minimize the influence of the former.

It is fair to say, therefore, that, judging by the proportion of children who keep their posts a long time, recommended posts are intrinsically more suitable than unrecommended ones. In other words, the adviser's judgments are founded on the bases of real suitability in occupational life. Further, the experimental group shows a higher percentage of first posts in

the classes of recommended work than the control group. If we take the extreme view that all these posts represent only those which the child *wanted* it would appear that the accompanying suitability (without which we may take it that the post would have been abandoned) is greater in the experimental group than in the control group. The slightly higher percentage retaining first posts in unrecommended work shown by the experimental group (25 per cent.) as compared with the control group (22 per cent.) might very well be due to the fact that in this group there were a number of instances in which the adviser could not recommend as highly suitable the post desired by the child. Hence by ignoring advice the child would augment the number of successes in what for the experimental group must be classified as unrecommended posts. In the control group this would occur much more rarely, because the occupation desired by the child was negated in relatively few cases.

Of course, the child's wish to keep a particular post will not alone determine tenure, but it has clearly a considerable influence in those cases where ability is sufficient for a *minimum* performance, or where the work is still in a preliminary stage, and no great demands on abilities and temperament have yet been made. In such cases, although the post may show a relatively long tenure, the judgment of suitability may still be true, in that work of greater suitability may exist. The influence of this factor is obviously greater in some classes of work than in others.

Another point worthy of consideration is the extent to which the number of 'temporary' posts in each grade of congruity affects the *proportion* retained throughout the whole period. It might seem, at first sight, that few of these would be graded A or B. But such posts are generally those which the employer says "anyone can do": they are suitable for children of relatively low intelligence and, provided that other necessary qualities of temperament and manual dexterity are possessed, they may be deemed highly suitable. For children of average or superior intelligence their suitability is less, but, even so, not lower than C. Hence, so far as the proportion of posts retained over the whole period is concerned, the effect is to reduce the percentages in grades of congruity A to C and relatively to

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increase those in grades D and E. Consequently the *real* differences between the proportions of posts of high and low congruity retained throughout the follow-up period are probably greater than the observed differences.

The influence of *starting* in a post of high congruity with advice may be gauged from the following results. In the experimental group 55 boys and 58 girls started in a post graded A for congruity with advice (113 altogether, or 21.4 per cent. of the total). In the control group 76 boys and 66 girls started in a post of Grade A (142 altogether, or 33.7 per cent. of the total). The advantage lies therefore with the latter group, in that more of them had the opportunity of remaining in suitable work. At the end of the period of follow-up 23 boys and 38 girls (11.5 per cent. of the total) in the experimental group had remained in one post, and 25 boys and 26 girls (11.3 per cent. of the total) in the control group had remained in one post. This comparison confirms what was said above regarding the greater appropriateness of the advising of the experimental group.

Bearing these points in mind, we may now examine in detail the relation between the work recommended and the grade of suitability. In Tables XXXVIII and XXXIX it will be seen that in all types of work the children who have remained in one post since leaving school are concentrated largely in grades of congruity A, B, and C. There is no instance in which the proportion in posts of low congruity, D or E, exceeds those of higher grade.

Generally, then, posts judged highly suitable seem to be associated more frequently with long tenure than posts considered less suitable. All types of work considered, the experimental group shows a distinctly higher proportion (42 per cent. boys, 50 per cent. girls) than the control group (33 per cent. boys, 33 per cent. girls) of posts graded A retained throughout the period. No differences are shown in the composite figures for posts graded D between the experimental and the control groups, both retaining 16 per cent. of such posts.

These percentages are not directly comparable with those given in Tables XXXVI and XXXVII, since a post of D congruity does not correspond exactly with an unrecommended post. But they show, perhaps more clearly than do any others of the tabulated figures, the difference between success in posts





considered highly suitable by the advisers and success in posts considered definitely unsuitable. This difference is considerable (the real difference is even larger), and it is quite evident that the Institute's estimates of vocational fitness, as expressed in Grade A of congruity with advice, are more often associated with success than are the estimates of the school conference.

## 2. AVERAGE LENGTH OF TIME IN POSTS ABANDONED

In contrast with those who did not change their employer we have those who constantly did change. For these we may calculate the average length of time spent in posts of different types and of different grades of suitability. In this instance only posts abandoned are considered—the posts held at the time of the last inquiry are excluded.

Since we are dealing with discarded posts only, the influence exercised by *unsuitability* might be supposed to be much in evidence. In other words, the greater the difference between the work found and that recommended the shorter should be the length of tenure of the post. True though this may be in general (and the results so far obtained indicate this), it is clear that unsuitability may not always be shown in shortness of tenure, but also (or alternatively) in the fact that the post is eventually relinquished. While it is retained a minimum efficiency may be maintained, but when at last unsuitability is discovered and the post is ended there may be a relatively long tenure to be recorded. On the other hand, some of the posts highly congruous with advice may show a comparatively short tenure for reasons quite unconnected with suitability. So that in Tables L and LI the issues are not at all clear-cut. Yet there are indications that posts not in congruity with advice are relinquished more quickly than those which are. For convenience these tables have been summarized in Tables XLII and XLIII.

In these tables (XLII and XLIII) the average time spent in posts of various types by all classes of boys and girls is shown in the last two columns. For instance, boys in the experimental group who tried work in Class IV spent 10.65 months in their posts, whereas those in the control group spent 8.16 months. These averages show, but only in the most general way, how





TABLE XII

## LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN MONTHS) : GIRLS

M = Average length of tenure expressed in months.

N = Number of posts from which M is derived.

Class of Work Recommended	Class of Work Found											
	I		II		III		IV		V		VI	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
I	12 50	12 85	5 00	11 12	4 00	4 80	7 00	4 80	1 50	1 50	7 67	0 75
M	2	13	1	6	1	3	1	3	1	1	3	1
N												
II			7 00		4 17		4 17		7 42		5 69	
M			2		3		3		3		11	
N												
III												
M												
N												
IV	16 25	5 17	7 00	10 67		2 25	4 75	4 04	15 00	6 67		
M	6	3	2	3		3	2	2	2	6		
N												
V	5 00		0 75		3 00	7 68	4 78	6 25	6 25	10 88	3 25	0 75
M	2		1		1	6	9	5	5	17	2	1
N												
VI	2 00	5 14	2 00	4 00	7 00	10 33	8 14	8 02	6 25	10 88	3 25	0 75
M	1	7	1	3	1	1	1	1	1	1	1	1
N												
VII	8 00		13 00		6 00	5 31	7 71	11 65	11 65	10 13	8 40	4 59
M	2		2		1	6	20	12	12	30	32	28
N												
Unclassifiable												
M												
N												
Unclassifiable												
M												
N												

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long a post of a particular class may be expected to be kept by any child taken at random. For purposes of comparison the other averages in Tables XLII and XLIII represent the time spent in (a) recommended work (*i.e.*, what is thought to be suitable work), and (b) unrecommended work (*i.e.*, what is thought to be less suitable work).

TABLE XLII  
LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN MONTHS): BOYS

Class of Work recommended	(a) In Work found in Same Class as that recommended		(b) In Work found in Classes other than that recommended		Class of Work found	In Work found by all Boys	
	Exp.	Con.	Exp.	Con.		Exp.	Con.
I .	9.6	10.44	6.5	7.4	I	9.97	9.30
II .	6.81	11.20	7.3	6.1	II	7.85	6.42
III .	8.01	6.66	6.3	5.4	III	6.63	5.60
IV .	12.32	10.31	8.2	5.6	IV	10.65	8.16
V .	5.18	6.75	7.5	7.0	V	5.57	6.68
VI .	7.48	7.36	7.8	5.5	VI	6.36	5.78
VII .	1.25	3.88	6.3	5.1	VII	6.56	5.40
VIII .	7.42	7.41	7.9	6.7	VIII	6.71	5.53
IX .	8.00	—	4.7	8.8	IX	5.14	5.23

TABLE XLIII  
LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN MONTHS): GIRLS

Class of Work recommended	(a) In Work found in Same Class as that recommended		(b) In Work found in Classes other than that recommended		Class of Work found	In Work found by all Girls	
	Exp.	Con.	Exp.	Con.		Exp.	Con.
I .	12.50	12.35	9.08	8.09	I .	10.58	9.53
II .	7.00	—	4.71	—	II .	6.68	8.72
III .	—	—	8.11	6.65	III .	6.00	5.33
IV .	10.75	7.66	8.79	4.56	IV .	7.54	6.26
V .	8.14	8.02	6.02	6.59	V .	7.29	9.44
VI .	10.13	8.90	5.34	6.73	VI .	8.03	8.02
VII .	2.60	4.89	8.30	4.78	VII .	5.98	5.82

In view of the peculiar complexity of the circumstances in which posts are taken and left, contradictions seem inevitable.

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In the case of boys' posts in Class I, for example, the average time spent by those recommended for that type of work was 9.6 months, as compared with 9.97 months by all, whether recommended or not. It will be observed that with girls (Table XLIII) this particular irregularity occurs not in Class I, but in Class VII (unskilled manual work).

The average time spent in work of a type different from that recommended ranges from 4.7 months (Table XLII, boys) to 9.08 months (Table XLIII, girls). Now if the general qualifications of the child, as indicated by the class of work recommended, be borne in mind, the differences between these average times may easily be interpreted. Boys in the experimental group who were thought suitable for clerical work spent 6.5 months in posts in work of *other* kinds (girls, however, spent 9.08 months). But boys who were thought unfit for anything but unskilled manual work (Class IX) could spend only 4.7 months in posts of *other* kinds, including any of the more attractive posts (such as clerical posts) they were fortunate enough to obtain. By way of contrast, the girls (Table XLIII) who did not take the unskilled work recommended managed to keep posts of other kinds for as long as 8.3 months.

The use of Tables XLII and XLIII lies in the answers to questions such as these:

Is the average tenure of the recommended posts in any class of work longer than the average tenure of the same post by all and sundry? (*I.e.*, does the first column of figures exceed the fifth column, and does the second column exceed the sixth, class by class?)

Is the average tenure of the recommended posts in any class of work (the first and second columns) longer than the average tenure of posts in all *other* classes of work (the third and fourth columns)?

If in general both answers are affirmative the conclusion is that suitability has an influence even on tenure of discarded posts. If in particular instances the answer is negative, can any reason be found for this exception? In most cases an explanation can be found along the lines already described. The low average tenure of recommended posts in Class VII (Table XLIII) by the Class VII type of girl (2.60 months), as compared with 5.98 months in the same class of work by all

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types of girl, may be due to the fact that such girls could only secure the least satisfactory of the unskilled posts, the more attractive ones (already mentioned) going to girls of better qualifications, thus raising the average tenure of such posts by all classes (5.98 months). It is certainly curious that the boys who had no similarly attractive posts in the unskilled class do *not* show a corresponding exception in Class IX.

On the whole, it seems fair to say that, since the tenure of an unrecommended post tends in a majority of cases to be shorter than that of a randomly selected post, and still shorter than that of a recommended post, the length of tenure is associated with congruity with advice.

As between the experimental group and the control group it is difficult to say, with such complex factors involved, in which this association of tenure with advice is really most marked. Taking Tables XLII and XLIII as they stand, one must admit that the control group has a larger number of instances in which the average tenure of the recommended post exceeds the other two averages. But the incidence of the disturbing factors is not equal in the two cases. In the control group the child's wish, whenever it came into operation, would influence it to relinquish posts not in accordance with that wish (*i.e.*, with the recommendation of the conference), and to endeavour to retain those posts in which its wishes might be fulfilled. In the experimental group this influence would not give similar results unless every single recommended post was also one which agreed with the child's wish. While this is possible (actually there was a fair proportion of cases in which the Institute's recommendation *confirmed* the child's wish) it does not appear to have happened; nor did the child's wish have a much better chance of being fulfilled even in the *first* post found than the Institute's recommendations. The classification of cases into 'recommended' and 'not recommended' in the experimental group does not, as it happens, allow the influence of this factor to be the same as it is in the control group.

When it is mentioned that the period of greatest fluctuation of employment occurred during the first two and a half years of industrial life it will be realized that differences in length of tenure of discarded posts may not mean very much. Of present posts 72 per cent. were obtained within two years of

TABLE XLIV

LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN MONTHS): BOYS

$\bar{M}$  = Average length of tenure expressed in months.  $N$  = Number of posts from which  $\bar{M}$  is derived.

Class of Work Recommended		Grade of Congruity of Work Found																	
		A		B		C+		C		C*		C-		D		E		Unclassifiable	
		Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
I	M . . .	10-80	9-74	8-46	2-88	3-00	—	4-41	10-90	5-00	6-40	—	—	6-16	3-00	—	—	16-00	—
II	N . . .	5	12	6	2	1	—	13	10	3	13	—	—	5	1	—	—	2	—
III	M . . .	6-90	11-33	7-00	7-58	—	—	8-45	6-94	3-42	2-00	—	—	13	6-04	—	3-38	23-00	5-00
IV	N . . .	14	3	6	3	—	—	19	19	6	1	—	—	7	7	—	3	3	5-00
V	M . . .	7-75	4-45	8-04	7-86	—	—	4-58	7-38	8-00	2-67	—	—	5-20	5-67	—	—	5	2
VI	N . . .	12	9	21	7	—	—	23	12	17	3	—	—	12	3	—	—	5	2
VII	M . . .	12-86	9-84	12-5	4-62	—	—	8-27	7-23	3-42	2-86	12-00	18-00	13-92	4-50	10-00	—	24-00	4-05
VIII	N . . .	7	18	15	38	3	—	11	40	3	10	—	—	1	1	—	—	5	5
IX	M . . .	8-33	7-44	5-72	7-32	—	—	7-87	7-71	5-33	3-86	5-00	—	16-60	6-19	—	—	3-44	6-00
X	N . . .	6	4	21	34	—	—	19	29	12	11	—	—	5	4	—	—	4	1
XI	M . . .	11-64	11-49	7-74	5-69	—	—	6-79	5-67	7-35	4-08	9-50	—	8-96	4-17	10-00	—	—	6-98
XII	N . . .	9	11	49	31	—	—	36	45	13	14	—	—	11	13	—	—	—	4
XIII	M . . .	2-19	3-88	6-05	5-00	—	—	5-18	5-74	4-58	0-75	18-00	—	8-39	12-38	6-00	—	5-95	—
XIV	N . . .	4	20	3	3	—	—	32	13	3	1	—	—	17	1	2	—	2	—
XV	M . . .	6-90	9-00	8-38	6-09	—	—	8-97	9-07	1-63	—	—	—	10-00	2-50	—	12-00	1-00	3-00
XVI	N . . .	5	5	8	6	—	—	17	7	2	—	—	—	7	5	—	1	1	1
XVII	M . . .	5-45	—	4-74	—	—	—	2-91	13-67	—	—	—	—	4-25	8-00	4-27	10-75	6-00	6-00
XVIII	N . . .	10	—	9	—	—	—	19	3	—	—	—	—	29	3	12	—	2	—
Unclassifiable	M . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5-16
	N . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	147
Total	M . . .	7-86	9-05	7-38	5-58	3-00	—	6-58	7-18	6-30	4-74	9-67	8-83	7-20	5-19	5-73	6-19	0-85	5-43
	N . . .	64	65	137	122	1	—	177	177	51	51	6	3	97	33	15	4	18	101



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leaving school, and 85 per cent. within two and a half years, even though the total follow-up period is barely four years. Most of the posts included in Tables XL, XLI, XLII, and XLIII are therefore early rather than late ones.

### Relation of Length of Tenure with Gradings for Congruity with Advice

In order to see whether the association of length of tenure and congruity of post with advice is more clearly disclosed by a different analysis, Tables XLIV, XLV, XLVI, XLVII,

TABLE XLVI  
LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN  
MONTHS): BOYS

M = Average length of tenure expressed in months.  
N = Number of posts from which M is derived.

Class of Work Recommended	Grade of Congruity of Work Found					
	A and B		All C's		D and E	
	Exp.	Con.	Exp.	Con.	Exp.	Con.
I						
M . .	9.53	8.76	4.43	8.19	6.16	3.00
N . .	11	14	17	23	5	1
II						
M . .	6.93	9.46	6.85	6.63	5.11	5.84
N . .	20	6	27	20	13	9
III						
M . .	7.93	5.94	6.03	6.30	5.20	5.67
N . .	33	16	40	15	12	3
IV						
M . .	9.22	6.30	7.55	6.65	12.94	9.00
N . .	22	56	15	57	4	2
V						
M . .	6.30	7.34	6.83	6.65	16.60	6.19
N . .	27	42	32	40	5	4
VI						
M . .	8.35	7.36	7.01	5.30	8.50	4.17
N . .	58	42	51	59	12	13
VII						
M . .	5.41	4.55	5.49	5.38	8.81	3.50
N . .	24	5	36	14	19	2
VIII						
M . .	8.12	7.41	8.20	9.07	10.00	5.67
N . .	13	11	19	7	7	3
IX						
M . .	3.77	—	2.91	9.90	5.35	8.00
N . .	19	—	19	5	41	3

## METHODS OF CHOOSING A CAREER

TABLE XLVII

LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN MONTHS): GIRLS

M = Average number of months.

N = Number of posts from which M is derived.

Class of Work Recommended	Grade of Congruity of Work Found					
	A and B		All C's		D and E	
	Exp.	Con.	Exp.	Con.	Exp.	Con.
I						
M . .	9.25	11.90	10.61	7.50	1.50	—
N . .	4	19	9	5	1	—
II						
M . .	5.38	—	6.05	—	2.63	—
N . .	4	—	19	—	6	—
III						
M . .	5.95	7.46	9.67	3.25	6.86	11.17
N . .	10	6	12	6	7	3
IV						
M . .	8.50	7.09	9.66	4.65	9.04	3.17
N . .	21	11	26	12	13	3
V						
M . .	7.53	7.93	6.77	6.04	7.05	6.50
N . .	49	87	43	90	14	7
VI						
M . .	6.65	9.30	6.12	6.40	9.92	—
N . .	36	37	55	41	14	—
VII						
M . .	3.09	6.52	2.22	2.91	12.27	4.43
N . .	24	17	9	11	15	7

XLVIII, XLIX, and L have been prepared. Tables XLIV and XLV show the average lengths of tenure of posts graded for suitability in the classes of work recommended. Tables XLVIII and XLIX show similar averages according to the classes of work found. Summaries are shown in Tables XLVI, XLVII, and L. A still more condensed summary is given in Tables LI and LII.

In Table LI, where the classification is based on work *recommended*, conflicting factors are again present, but there is a tendency for posts of A and B congruity to be retained longer than posts of D and E congruity when clerical work and 'social' work<sup>1</sup> are advised. When skilled or semi-skilled manual work is advised, posts of D and E congruity are retained longer than

<sup>1</sup> 'Social' work in the sense explained at p. 195.



TABLE XLVIII

LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN MONTHS): BOYS

M = Average number of months, N = Number of posts from which M is derived.

[illegible]

TABLE XLIX  
LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN MONTHS): GIRLS

Class of Work Found		Grade of Congruity of Work Found																	
		A		B		C+		C		C*		C-		D		E		Total	
Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
I	M	12-50	12-16	—	8-44	—	8-00	13-25	3-33	—	—	—	—	15-67	11-00	5-70	3-10	10-58	9-53
N	N	2	11	—	4	—	1	2	3	—	—	—	—	3	1	5	1	12	21
II	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
N	N	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
III	M	—	—	—	5-00	—	—	5-00	5-00	—	—	—	—	4-38	2-00	28-00	—	6-68	8-72
N	N	—	—	—	4	—	—	2	2	—	—	—	—	2	1	1	—	7	9
IV	M	—	—	—	—	—	—	—	6-50	—	—	—	—	—	—	—	—	6-00	5-33
N	N	—	—	—	1	—	—	—	2	—	—	—	—	—	—	—	—	1	3
V	M	13-58	13-67	8-00	3-82	—	—	1-55	3-57	3-25	5-38	8-63	0-75	12-85	10-50	—	—	7-54	6-26
N	N	3	6	8	7	—	—	5	12	2	3	2	1	5	3	—	—	25	32
VI	M	9-80	8-84	4-20	10-01	0-60	—	7-34	10-82	—	—	15-25	9-38	8-65	6-03	8-75	18-90	7-29	0-44
N	N	16	33	23	34	2	—	9	7	—	—	2	13	8	4	2	68	88	—
VII	M	11-23	11-09	3-06	8-68	—	7-00	7-94	4-50	9-05	6-53	4-00	35-00	9-16	4-67	—	—	8-03	8-02
N	N	11	11	16	31	—	1	29	11	10	21	1	1	23	3	—	—	90	79
VIII	M	2-66	6-81	5-30	6-49	1-83	5-63	5-11	4-58	8-24	5-79	6-83	—	9-00	—	—	3-08	5-98	5-82
N	N	11	9	33	23	3	4	30	18	37	80	3	—	15	1	—	1	138	136
Total	M	8-73	9-87	5-03	8-38	1-34	6-25	6-56	5-16	8-21	5-93	7-53	12-21	9-00	6-81	8-15	10-88	7-08	7-47
N	N	43	70	83	106	5	6	81	55	49	104	8	6	61	17	2	4	341	368

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TABLE L  
LENGTH OF TENURE OF PAST POSTS (EXPRESSED IN  
MONTHS): BOYS

M = Average number of months.  
N = Number of posts from which M is derived.

Class of Work Found	A and B		All C's		D and E	
	Exp.	Con.	Exp.	Con.	Exp.	Con.
I						
M . .	11.50	8.61	3.86	12.88	14.29	8.55
N . .	11	14	7	4	6	5
II						
M . .	7.09	7.24	8.67	7.55	7.42	3.00
N . .	32	16	37	55	12	8
III						
M . .	7.22	4.69	6.28	6.54	6.92	3.44
N . .	26	13	61	68	19	13
IV						
M . .	10.34	9.22	12.33	5.20	9.83	18.00
N . .	23	42	9	5	10	1
V						
M . .	5.67	5.82	6.25	11.50	5.00	11.00
N . .	18	21	8	1	13	3
VI						
M . .	7.15	5.42	6.05	7.81	5.46	4.31
N . .	57	61	29	23	40	4
VII						
M . .	7.63	6.15	6.67	7.50	2.00	3.13
N . .	4	5	3	2	1	2
VIII						
M . .	7.42	7.02	5.87	4.87	8.55	10.00
N . .	23	14	44	49	11	1
IX						
M . .	3.46	2.00	5.45	5.63	—	—
N . .	7	1	37	24	—	—
Total . . .	7.53 201	6.78 187	6.58 235	6.52 231	7.00 112	5.30 37

posts of A and B congruity. But in these cases a post of D or E congruity often implies a post in clerical or in 'social' work; a high average tenure will then result even when the post has been given up. Similarly, in the case of unskilled work a post of A or B congruity is necessarily one in which the average tenure is normally short, and a post of low congruity will certainly be one in which the average tenure tends to be longer. These results indicate that the children have been trying to

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TABLE LI

Class of Work Recommended	Average Length of Tenure in Months in Posts of Grades shown					
	A and B		C		D and E	
	Exp.	Con.	Exp.	Con.	Exp.	Con.
Clerical work						
Boys . . . .	8.0	8.9	5.9	7.4	5.5	5.5
Girls . . . .	7.3	11.9	7.5	7.5	2.5	—
'Social' work						
Boys . . . .	7.93	5.94	6.03	6.30	5.20	5.67
Girls . . . .	7.6	7.2	9.9	4.1	8.25	7.14
Manual work						
Skilled						
Boys . . . .	7.5	6.9	7.1	6.1	10.0	5
Girls . . . .	7.53	7.93	6.77	6.04	7.05	6.5
Semi-skilled						
Boys . . . .	8.12	7.41	8.20	9.07	10.0	5.67
Girls . . . .	6.65	9.30	6.12	6.40	9.92	—
Unskilled						
Boys . . . .	3.77	—	2.91	9.90	5.35	8.00
Girls . . . .	3.09	6.52	2.22	2.91	12.27	4.43

perform unsuitable work, but the fact that the posts are no longer held suggests that their efforts were fruitless.

Similar results are obtained when the work *found* forms the basis of classification (Table LII).

TABLE LII

Class of Work Found	Average Length of Tenure in Months in Posts of Grades shown (Boys)					
	A and B		C		D and E	
	Exp.	Con.	Exp.	Con.	Exp.	Con.
Clerical work . . .	8.2	7.8	7.9	7.9	9.6	5.2
'Social' work . . .	7.22	4.69	6.28	6.54	6.92	3.44
Manual work						
Skilled . . . .	7.6	6.8	7.8	7.1	6.0	7.4
Semi-skilled . . .	7.42	7.02	5.87	4.87	8.55	10.00
Unskilled . . . .	3.46	2.0	5.45	5.63	—	—

This table confirms what was said above by removing some of the exceptions to the general conclusion as to the association of long tenure and congruity with advice. It will be seen that in skilled work, while the tenure in posts of Grades A and B is not increased, it is longer than the tenure of posts of Grades D

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and E, for now the gradings for congruity apply to work of the same kind. It is the fitness of the boys themselves in relation to the work found that is now in question. (In Table LI it was the appropriateness of the work found in relation to that recommended.)

The only exception in Table L to what one would *expect* occurs in regard to semi-skilled work; both the experimental and the control groups show a longer tenure in posts of low congruity than in posts of high congruity. Several explanations are possible.

### 3. EMPLOYERS' REPORTS

Although some difficulty was experienced in interpreting employers' reports, the scale of values assigned to them has enabled a number of useful comparisons to be made. These are shown in Tables LIII and LIV.

TABLE LIII  
EMPLOYERS' REPORTS ON ALL POSTS HELD: BOYS

Degree of Congruity of Work Found	Grade of Employers' Reports											
	1 <sup>1</sup>		2 +		2		2 -		3		4	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
A												
Percentage . .	17	9	11	9	58	69	5	2	5	3	5	8
Number . .	11	6	7	6	37	44	3	1	3	2	3	5
B												
Percentage . .	7	19	12	13	56	41	7	5	7	11	9	12
Number . .	7	15	12	10	54	31	7	4	9	9	9	10
C												
Percentage . .	8	7	9	4	52	64	5	4	16	11	10	10
Number . .	15	11	16	7	97	105	10	6	29	18	18	17
D												
Percentage . .	5	12	5	6	56	44	5	—	19	25	11	12
Number . .	3	2	3	1	35	7	3	—	12	4	7	2
E												
Percentage . .	—	—	17	50	50	—	—	—	50	—	—	—
Number . .	—	—	1	1	3	—	—	—	2	1	—	—
Unclassifiable												
Percentage . .	17	—	—	—	83	100	—	—	—	—	—	—
Number . .	1	—	—	—	5	1	—	—	—	—	—	—
A and B												
Percentage . .	11.2	14.7	11.9	11.1	56.9	52.5	6.5	3.5	6.5	7.7	7.5	10.5
Number . .	18	21	19	16	91	75	10	5	10	11	12	15
D and E												
Percentage . .	4.3	11.1	5.8	11.1	55.1	38.9	4.3	—	20.2	27.8	10.1	11.1
Number . .	3	2	4	2	38	7	3	—	14	5	7	2

<sup>1</sup> For explanation of the figures in heading of columns see p. 200.

<sup>2</sup> The percentage lines show the percentage of all reports in work of the grade of congruity concerned.

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TABLE LIV

EMPLOYERS' REPORTS ON ALL POSTS HELD: GIRLS

Degree of Congruity of Work Found	Grade of Employers' Reports											
	1		2 +		2		2-		3		4	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
A												
Percentage . .	35	27	8	9	41	49	4	3	2	4	10	7
Number . .	17	18	4	6	20	33	2	2	1	3	5	5
B												
Percentage . .	13	7	5	9	63	61	8	11	5	8	8	4
Number . .	8	5	3	7	40	45	5	8	3	6	5	3
C												
Percentage . .	8	10	5	6	50	62	5	5	12	9	19	8
Number . .	8	11	5	6	49	66	5	5	12	10	19	8
D												
Percentage . .	7	13	7	—	49	75	9	—	18	—	11	13
Number . .	3	1	3	—	22	6	4	—	8	—	5	1
E												
Percentage . .	—	—	33	—	33	—	—	—	33	100	—	—
Number . .	—	—	1	—	1	—	—	—	1	2	—	—
A and B												
Percentage . .	22	16	6	9	53	55	6	7	4	6	9	6
Number . .	25	23	7	13	60	78	7	10	4	9	10	8
D and E												
Percentage . .	6	10	8	—	48	60	8	—	19	20	10	10
Number . .	3	1	4	—	23	6	4	—	9	2	5	1

It will be observed that 'highly satisfactory' reports (Grade 1 in the tables) occur more frequently in connexion with posts of Grades A and B congruity than with posts of Grades D and E congruity. Conversely, reports indicating dissatisfaction (Grade 3 in the tables) occur more frequently in connexion with posts of Grades D and E congruity than in any others. In the tables for both boys and girls the inverse relation in the third column of figures is as striking as the direct relation in the first column. This double relation is also shown by the children of the control group, but the progressive increase and decrease in the two columns is not nearly so well defined. (This was referred to in the summary account in Chapter VIII, where extracts from Tables LIII and LIV were given.)

Many of the employers' reports are classified under Grade 2, and it is difficult to say what significance should be attached to them. There are more 'satisfactory' reports than one would expect. For instance, to take reports in Grade 2 which apply to posts of D congruity, 56 per cent. (boys) and 49 per cent. (girls) in the experimental group, and 44 per cent. (boys) and 268

75 per cent. (girls) in the control group, are given a 'satisfactory' report. The percentages of those in posts of A congruity who are given a satisfactory report are rather more for boys, but considerably less for girls. What the proportion of satisfactory reports in each grade of congruity with advice (which, for present purposes, we may take to be correlative with suitability of post) *should* be it is difficult to say. If we reduce the categories to three—'good,' 'satisfactory,' and 'unsatisfactory'—and assume a random distribution of children among the employers, we may expect equal numbers of children to secure 'good' and 'unsatisfactory' reports, and about half of them to obtain 'satisfactory' reports. This distribution of reports will however be disturbed (i) if the employer is easily satisfied and reports "good" when he means "satisfactory" and "satisfactory" when he means "unsatisfactory," and (ii) if there is a definite relation between the vocational fitness of the child and the post he has taken tending to promote efficiency and so to procure a 'good' report. In the absence of such a relation we should expect 'good' and 'bad' reports to be distributed at random.

As regards the first of these, while there was apparently some disinclination to give an 'unsatisfactory' report,<sup>1</sup> there was little tendency to give high praise where it was not deserved. 'Satisfactory' covered a variety of conditions, some of them not being directly associated with the suitability of the child for the post. Moreover, the employer reports only on work actually done, whereas judgments of suitability for any given post include the future as well as the present demands of the work. The optical instrument maker, for instance, who reports that a boy is quite satisfactory on errands, and will be given a chance to learn optical work when a vacancy occurs, is not expressing an opinion on the boy's suitability for optical work.

The number of 'unsatisfactory' reports, therefore, is less than it should be,<sup>2</sup> and this affects the figures of Tables LIII and LIV in two ways. It increases the number of reports in Grade 2 and reduces the number of reports in Grade 3. But the factor

<sup>1</sup> Cf. Chapter VI, p. 186. Employers sometimes misunderstood the aim of the inquiry and hesitated to say exactly what they thought.

<sup>2</sup> Another factor possibly affecting the number of such reports is the absence of reports in cases of short tenure in which the employer was not interviewed (cf. p. 172).

of suitability appears to be so important in all the foregoing studies of the relation of suitability of post to the criteria adopted that it is hardly likely that the addition of further reports to Grade 3 would alter the significance of the proportions in Grades A and B shown in Tables LIII and LIV. On the contrary, it would seem very probable that they would fall in Grades C, D, or E, and so would strengthen the tendencies disclosed in the tables.

Of course, it is not essential that the results of this analysis of the employers' reports should conform to those already obtained; the estimates of suitability may be erroneous, and the employers' judgments may be nearer the truth. But it is at least probable that both are often correct, inasmuch as it may be possible for the boy or girl of inferior abilities and general suitability to give satisfactory service in a post making small demands, and so to secure a favourable, if not a glowing, report.

Be that as it may, the fact that the proportions of 'good' and 'unsatisfactory' reports are not equal seems to point to the influence of the second factor, and the gradation in the percentages seems to indicate a direct association of good reports and congruity with advice. In other words, the judgments of suitability are confirmed by a record of efficiency, and this is definitely more marked in the experimental group than in the control group.

#### Reports on Present Posts

Tables LV and LVI, in which the employers' reports on posts held at the time of last inquiry only are considered, show the same result. These have already been dealt with in Chapter VIII. The situation is summarily expressed in the two tables opposite.

In the experimental group 70 per cent. of the 'highly satisfactory' reports are in Grades A and B, whereas only 48 per cent. of *all* reports are in these grades. Conversely, 75 per cent. of 'unsatisfactory' reports are in Grades C, D, and E, whereas only 52 per cent. of *all* reports are in these grades. In the control group only 60 per cent. of the 'highly satisfactory' reports are in the two higher grades, whereas 44 per cent. of *all* reports are in these grades. Conversely, 62 per cent. of



TABLE LV  
EMPLOYERS' REPORTS ON PRESENT POSTS ONLY: BOYS

Grade of Congruity of Work Found	Grade of Employers' Reports											
	1		2 +		2		2 -		3		4	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
A												
Percentage . . .	19	12	11	9	62	72	5	2	3	2	—	2
Number . . .	7	5	4	4	23	31	2	1	1	1	—	1
B												
Percentage . . .	5	25	10	15	67	45	5	4	7	6	5	6
Number . . .	3	12	6	7	38	21	3	2	4	3	3	3
C												
Percentage . . .	8	12	10	4	67	69	5	5	3	4	7	6
Number . . .	7	9	9	3	58	53	4	4	3	3	6	5
D												
Percentage . . .	9	14	6	29	54	57	6	—	18	—	6	—
Number . . .	3	1	2	2	18	4	2	—	6	—	2	—
E												
Percentage . . .	—	—	—	—	67	100	—	—	33	—	—	—
Number . . .	—	—	—	—	2	1	—	—	1	—	—	—
Unclassifiable Group												
Percentage . . .	—	3	—	9	—	68	—	3	—	15	—	3
Number . . .	—	1	—	3	—	23	—	1	—	5	—	1

TABLE LVI  
EMPLOYERS' REPORTS ON PRESENT POSTS ONLY: GIRLS

Grade of Congruity of Work Found	Grade of Employers' Reports											
	1		2 +		2		2 -		3		4	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
A												
Percentage . . .	43	33	12	16	33	40	2	7	5	2	5	2
Number . . .	18	14	5	7	14	17	1	3	2	1	2	1
B												
Percentage . . .	16	8	10	14	64	67	8	8	2	—	2	3
Number . . .	10	3	6	5	40	24	5	3	1	—	1	1
C												
Percentage . . .	6	17	4	8	58	55	7	8	10	8	13	6
Number . . .	4	11	3	5	39	36	5	5	7	5	9	4
D												
Percentage . . .	4	17	12	—	50	66	8	—	15	—	12	17
Number . . .	1	1	3	—	13	4	2	—	4	—	3	1
E												
Percentage . . .	—	—	100	—	—	—	—	—	—	—	—	—
Number . . .	—	—	1	—	—	—	—	—	—	—	—	—
Unclassifiable Group												
Percentage . . .	—	4	—	8	100	72	—	8	—	1	—	4
Number . . .	—	1	—	2	1	18	—	2	—	1	—	1

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'unsatisfactory' reports are in Grades C, D, and E, whereas 41 per cent. of *all* reports are in these grades.

Taking Grade A only:

In the experimental group 50 per cent. of the 'highly satisfactory' reports, against 10 per cent. of the 'unsatisfactory' reports, are in this grade.

In the control group 34 per cent. of the 'highly satisfactory' reports, against 16 per cent. of the 'unsatisfactory' reports, are in this grade.

The proportions of all reports in Grade A are 19 per cent. for the experimental group and 22 per cent. for the control group.

Generally, then, the percentage of 'highly satisfactory' reports coming into the higher grades of congruity is greater than the percentage of all reports coming into these higher grades, whereas the percentage of 'unsatisfactory' reports is less than the percentage of all reports coming into these grades.

The conclusion is therefore irresistible—that advice and suitability are directly associated.

### 4. REPORTS FROM CHILDREN

The children's reports suffer from the fact that suitability of work is not the most important feature in the child's mind when he makes the report. Nevertheless, there is a tendency for the 'highly satisfactory' reports to be more often associated with posts highly congruous with advice than with posts of low congruity. But the number of reports expressing satisfaction is relatively small. Details are given in Tables LVII and LVIII.

In both the experimental group and the control group 50 per cent. of the reports are of Grade 2. In the experimental group 30 per cent. and in the control group 33 per cent. express dissatisfaction. Only 5 per cent. of the reports in the experimental group and 2.9 per cent. in the control group express high satisfaction. In view of this distribution it is unlikely that analysis will disclose any close association of children's opinions with those of the advisers; for not only are the expressions of high satisfaction few, but the reasons given have nothing to do with real suitability. Dissatisfaction, as remarked elsewhere, may be due to lack of prospects in an otherwise

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TABLE LVII

BOYS' EXPRESSIONS OF LIKING OR DISLIKING FOR ALL POSTS

Grade of Congruity of Work Found	Grade of Boys' Reports <sup>1</sup>											
	1		2 +		2		2 -		3		4	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
A												
Percentage . . .	5	—	5	3	51	71	10	2	21	24	7	—
Number . . .	3	—	3	2	29	47	6	1	12	16	4	—
B												
Percentage . . .	2	1	6	4	39	48	12	5	33	41	7	1
Number . . .	2	1	6	3	39	39	12	4	33	33	7	1
C												
Percentage . . .	1	—	1	1	58	47	8	4	37	47	3	2
Number . . .	1	—	1	1	80	59	11	5	57	59	5	2
D												
Percentage . . .	1	—	4	8	51	31	10	—	31	62	3	—
Number . . .	1	—	3	1	37	4	7	—	22	8	3	—
E												
Percentage . . .	14	—	—	—	43	00	—	—	43	—	—	—
Number . . .	1	—	—	—	3	3	—	—	3	—	—	—
Unclassifiable												
Percentage . . .	—	—	—	33	50	33	—	33	50	—	—	—
Number . . .	—	—	—	1	4	1	—	1	4	—	—	—
A and B												
Percentage . . .	3.2	7	5.8	3.5	43.6	58.5	11.6	3.5	29.0	33.3	7.1	7
Number . . .	5	1	9	5	68	86	18	5	45	49	11	1
D and E												
Percentage . . .	2.5	—	3.8	6.3	50.4	43.7	8.9	—	31.6	50	2.5	—
Number . . .	2	—	3	1	40	7	7	—	25	8	2	—

suitable post, or it may be due to the personality of the employer or the conditions of work quite apart from the nature of the work. It is certain that many more posts judged of Grade A suitability are associated with Grade 2 reports and even with Grade 3 reports than would be the case if these influences were not operative. At the same time one would imagine that the expressions of high satisfaction would only be given when there was some real liking for the work and a feeling of successful achievement in it. Hence 'highly satisfactory' reports may be regarded as affording some evidence of the association of success (as measured by high satisfaction) with the adviser's judgment of suitability. Reports of Grade 2 would appear to be too indefinite, and reports of Grade 3 would appear to be too much influenced by extraneous factors, to yield any positive evidence of the same kind. Nevertheless, the results of analysis are entirely in accord with this view.

<sup>1</sup> For explanation of figures at head of columns see p. 200.

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TABLE LVIII

GIRLS' EXPRESSIONS OF LIKING OR DISLIKING FOR ALL POSTS

Grade of Congruity of Work Found	Grade of Girls' Reports											
	1		2 +		2		2 ~		3		4	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
A												
Percentage . .	17	6	4	5	56	63	7	1	15	23	2	1
Number . .	9	5	2	4	30	51	4	1	8	19	1	1
B												
Percentage . .	4	7	1	2	53	64	10	4	24	18	7	5
Number . .	3	6	1	2	36	58	7	4	16	16	5	5
C												
Percentage . .	7	5	2	6	49	47	5	6	33	35	3	2
Number . .	7	6	2	7	49	59	5	8	33	44	3	2
D												
Percentage . .	13	—	—	6	48	33	5	—	25	56	10	6
Number . .	5	—	—	1	19	6	2	—	10	10	4	1
E												
Percentage . .	—	—	50	—	25	100	—	—	25	—	—	—
Number . .	—	—	2	—	1	2	—	—	1	—	—	—
A and B												
Percentage . .	10	6	2	3	54	63	9	3	20	20	5	3
Number . .	12	11	3	6	66	109	11	5	24	35	6	6
D and E												
Percentage . .	11	—	5	5	45	40	5	—	25	50	9	5
Number . .	5	—	2	1	20	8	2	—	11	10	4	1

The general trend of the figures in Tables LVII and LVIII are summarized in Table LXI by contrasting the percentages of reports of Grade 1 with those of Grade 3.

Taking each row in this summary table in turn, we cannot say that there is any marked gradation in the percentages from posts of A congruity to posts of D or E congruity. But the experimental group, in spite of the E percentage for boys, and D percentage for girls, at least shows a tendency toward association of satisfaction with high congruity of post with advice, which the control group does not. The proportion of highly satisfied boys and girls in posts of Grade D is less (even if by small amounts) than the proportion of highly satisfied children in Grade A posts. Conversely, the proportion of dissatisfied children is higher in posts of Grade D than in posts of Grade A. The control group has only one satisfied boy, so that comparisons are impossible in regard to high satisfaction. In regard to expressions of dissatisfaction, these are definitely more numerous in relation to posts of D congruity than in posts of A

TABLE LIX  
BOYS' EXPRESSIONS OF LIKING OR DISLIKING FOR PRESENT POSTS

Grade of Congruity of Work Found	Grade of Boys' Reports											
	1		2 +		2		2 -		3		4	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
A												
Percentage . .	6	3	6	3	68	83	13	3	6	9	—	—
Number . .	2	1	2	1	21	30	4	1	2	3	—	—
B												
Percentage . .	2	—	8	10	57	59	15	12	15	20	4	—
Number . .	1	—	4	4	30	24	8	5	8	8	2	—
C												
Percentage . .	—	—	1	2	66	73	9	4	21	22	3	—
Number . .	—	—	1	1	51	40	7	2	16	12	2	—
D												
Percentage . .	3	—	3	11	77	78	6	—	10	11	—	—
Number . .	1	—	1	1	24	7	2	—	3	1	—	—
E												
Percentage . .	—	—	—	100	—	—	—	—	—	—	—	—
Number . .	—	—	—	2	—	—	—	—	—	—	—	—
Unclassifiable Group												
Percentage . .	—	3	—	3	—	68	—	10	—	16	—	—
Number . .	—	1	—	1	—	21	—	3	—	5	—	—

TABLE LX  
GIRLS' EXPRESSIONS OF LIKING OR DISLIKING FOR PRESENT POSTS

Grade of Congruity of Work Found	Grade of Girls' Reports											
	1		2 +		2		2 -		3		4	
	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.	Exp.	Con.
A												
Percentage . .	16	11	8	3	61	82	8	3	4	3	2	—
Number . .	8	4	4	1	30	31	4	1	2	1	1	—
B												
Percentage . .	7	4	—	9	68	67	10	4	10	7	5	9
Number . .	3	2	—	4	28	30	4	2	4	3	2	4
C												
Percentage . .	5	5	2	7	60	65	7	7	13	11	4	4
Number . .	3	3	1	4	38	36	4	4	7	6	2	2
D												
Percentage . .	12	—	—	—	64	86	8	14	8	—	8	—
Number . .	3	—	—	—	16	6	2	1	2	—	2	—
E												
Percentage . .	—	—	—	—	100	—	—	—	—	—	—	—
Number . .	—	—	—	—	2	—	—	—	—	—	—	—
Unclassifiable Group												
Percentage . .	—	—	—	—	67	93	—	4	33	—	—	4
Number . .	—	—	—	—	2	25	—	1	1	—	—	1

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TABLE LXI

CHILDREN'S EXPRESSIONS OF LIKING OR DISLIKING FOR ALL POSTS

Group	Degree of Satisfaction Expressed	Grade of Congruity of Post				
		A	B	C	D	E
Experimental						
Boys . . .	High	5	2	1	1	14
Girls . . .	"	17	4	7	13	—
Boys . . .	Low	21	33	37	31	43
Girls . . .	"	15	24	33	25	25
Control						
Boys . . .	High	—	1	—	—	—
Girls . . .	"	6	7	5	—	—
Boys . . .	Low	24	41	47	62	—
Girls . . .	"	23	18	35	56	—

congruity. But this is exactly what would be expected from the fact that the posts of D congruity in the control group are a 'selected' group, being those in which incongruity with advice was absolutely certain. (Generally, in regard to all other posts in the control group the estimated degree of congruity is subject to error.) And since incongruity with advice in the case of the control group often implies incongruity with the child's wish, this result should inevitably appear.

It seems odd, however, to find that 21 per cent. of the boys' opinions regarding posts of A congruity are of Grade 3, whereas only 5 per cent. are of Grade 1. But this cannot be interpreted to mean that the judgments of suitability expressed by the A congruity were erroneous. Grade 3 reports were far more numerous than Grade 1 reports; consequently the number associated with Grade A posts could easily exceed those from Grade 1.

The corresponding summary table for *present* posts (derived from Tables LIX and LX) is shown on p. 277.

Again, the experimental group (both boys and girls) shows an excess of Grade A posts over Grade D posts when high satisfaction is expressed and the reverse when low satisfaction is expressed. The control group has few cases in Grade D posts, but where they occur the same relation is seen.

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TABLE LXII

CHILDREN'S EXPRESSIONS OF LIKING OR DISLIKING FOR PRESENT POSTS

Group	Degree of Satisfaction Expressed	Grade of Congruity of Post				
		A	B	C	D	E
Experimental						
Boys . . .	High	6	2	—	3	—
Girls . . .	"	16	7	5	12	—
Boys . . .	Low	6	15	21	10	—
Girls . . .	"	4	10	13	8	—
Control						
Boys . . .	High	3	—	—	—	—
Girls . . .	"	11	4	5	—	—
Boys . . .	Low	9	20	22	11	—
Girls . . .	"	3	7	11	—	—

## 5. REASONS FOR LEAVING POSTS

Tables LXIII and LXIV enable comparisons to be made between the reasons for leaving which *appear* to indicate unsuitability and those which do not. The reasons for leaving posts of each grade of suitability (A to E) are separated into two groups, those which suggest unsuitability and those which seem not to be connected with suitability at all. Possibly these divisions are quite arbitrary; at any rate, as explained elsewhere (p. 201), the *real* reasons for leaving posts are generally obscure, and may refer either to the work being done, or to future work, or to work desired in the future and not likely to be obtained.

Consequently it is difficult to say exactly what significance attaches to the figures in Tables LXIII and LXIV. There is a higher percentage of reasons suggesting unsuitability associated with Grade E posts than with Grade A posts in both the experimental and the control group for boys, but only in the control group for girls. On the whole, one would expect more of these reasons in the Grade E posts; the post would appear to the child so definitely *bad* that the reason given would certainly be influenced by this fact. Against this must be set the undoubted attractiveness of certain classes of work, the effect of which would be to cause the child to find any reason but the true one for leaving a post which he liked or thought he liked. Similarly,

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TABLE LXIII

REASONS FOR LEAVING: BOYS

Grade of Suitability of Work Found	Reasons for Leaving indicative of Unsuitability of Work				Reasons for Leaving not indicative of Unsuitability of Work			
	Experimental		Control		Experimental		Control	
	Number	Percentage of Grade	Number	Percentage of Grade	Number	Percentage of Grade	Number	Percentage of Grade
A	12	23	11	20	40	77	45	80
B	31	29	32	29	76	71	78	72
C	56	27	53	28	155	74	140	72
D	23	29	9	36	56	71	16	64
E	5	36	1	33	9	64	2	67
Unclassifiable	3	20	4	50	12	80	4	50
A and B	43	27	43	26	116	73	123	74
D and E	28	30	10	36	65	70	18	64

TABLE LXIV

REASONS FOR LEAVING: GIRLS

Grade of Suitability of Work Found	Reasons for Leaving indicative of Unsuitability of Work				Reasons for Leaving not indicative of Unsuitability of Work			
	Experimental		Control		Experimental		Control	
	Number	Percentage of Grade	Number	Percentage of Grade	Number	Percentage of Grade	Number	Percentage of Grade
A	12	29	17	30	30	71	39	70
B	14	23	18	20	48	77	72	80
C	24	24	35	25	78	76	105	75
D	12	21	7	39	44	79	11	61
E	1	13	2	50	7	87	2	50
A and B	26	25	35	24	78	75	111	76
D and E	13	20	9	41	51	80	13	59

in the case of posts judged suitable to the child but not particularly liked by him the reasons put forward for giving up the post would probably emphasize the points of maladjustment as being reasons for not liking the work. In these complex circumstances comparative figures based on a variety of reasons are not very helpful.

But when we compare the *distribution* of the reasons among posts of different grades (Table LXV) it will be observed that



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there are only slight differences between the proportions in each grade for the two main groups of reasons. For instance, approximately 22 per cent. of the reasons of each type are associated with Grade B posts, and roughly 40 per cent. with posts graded C for congruity with advice. If the reasons not directly suggesting unsuitability are taken as a sample of what

TABLE LXV  
REASONS FOR LEAVING

(a) Reasons for Leaving indicative of Unsuitability of Work

Group	Percentage associated with Work of Suitability				
	A	B	C	D	E
Experimental					
Boys . . .	9.2	23.9	43.1	17.7	3.9
Girls . . .	19	22.2	38.1	19	1.6
Control					
Boys . . .	10	29.1	48.2	8.2	.9
Girls . . .	21.5	22.8	44.3	8.8	2.5

(b) Reasons for Leaving not indicative of Unsuitability of Work

Group	Percentage associated with Work of Suitability				
	A	B	C	D	E
Experimental					
Boys . . .	11.5	21.9	44	16	2.6
Girls . . .	14.5	23.2	37.7	21.5	3.1
Control					
Boys . . .	15.8	27.4	49.8	5.9	.6
Girls . . .	17	31.3	45.7	4.8	1.2

happens when the suitability factor is excluded, comparison between sections (a) and (b) of Table LXV shows how much influence the suitability factor has. It appears to be very little. We may reason in this fashion: the experimental group (boys) have 11.5 per cent. of the reasons *not* indicating unsuitability, and 9.2 per cent. of the reasons which *do* (or are supposed to) indicate unsuitability associated with Grade A posts. Moreover, they have 16 per cent. in the former case associated with Grade D posts and 17.7 per cent. in the latter. Hence there is a small

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balance in favour of the view that unsuitability as expressed in reasons for leaving should be more frequently associated with the Grade D posts than with the Grade A posts. The girls' reports, however, do not support this statement either for the experimental group or for the control group. On the whole, however, in the control group there is associated with Grade D posts a larger proportion of the reasons expressing unsuitability than of the reasons not expressing unsuitability. This isolated result may be explained, as already mentioned, by the relatively fewer posts of D congruity and by the greater probability that such a post is also a post not specially desired by the child. This particular influence would be strong not only in determining length of tenure (p. 258), but also in shaping the reasons given when posts were left, whether voluntarily or not. This is borne out by the fact that "Left for a 'better' job" often meant dissatisfaction with the post held, not that a better post *had* been secured.<sup>1</sup>

In these circumstances the following figures for *dismissals* for the experimental group are interesting because they suggest that, if the various factors could be satisfactorily separated, definite evidence would be forthcoming as to the influence of suitability of work.

TABLE LXVI

Reasons for Dismissal	Posts of A and B Congruity	Posts of D and E Congruity
(a) Connected with firm (slackness of work, etc.)	Per cent.	Per cent.
Boys . . . . .	32	19
Girls . . . . .	36	37
(b) Connected with child (inefficiency, misbehaviour, etc.)		
Boys . . . . .	8	20
Girls . . . . .	0	7

It certainly looks as though the employer is less inclined to dismiss the 'suitably' placed child than the 'unsuitably' placed one, even when the criterion of 'suitability' is the vocational advice given rather than the employer's own first-hand opinion.

<sup>1</sup> Often a boy would apply to the exchange for a "better job" and eventually take one no better than the one he left.

## CHAPTER X

### THE EXPERIMENT REVIEWED

THIS account of the Institute's experiment will not be complete without some review of the more important results reached and some indications both of the practical value of vocational guidance and of the ways in which the lessons of this experiment may be applied.

The statistical treatment of the follow-up data has taken a great deal of time, and the condensed statements of the results in Chapters VIII and IX occupy considerable space. It was deemed advisable to present them in sufficient detail to enable those who are engaged in the practical work of vocational guidance to make their own studies of particular points. To the general reader, however, the case studies will be more interesting than the tables of figures. It is perhaps unfortunate that the proofs of the value of vocational guidance desired by the sceptic cannot be presented wholly in the form of case studies. It is certainly unfortunate that, owing to the complexity of the data, the statistical treatment of the follow-up cannot be given in a simple form, because there is danger that the value of the results (which consist of a series of differences, individually not large, but collectively often significant) may be under-estimated.

#### I. DISADVANTAGES OF STATISTICAL TREATMENT

In dealing with the tabulated comparisons it should be realized that a case study is a very different thing from the statistical treatment of groups of cases. In the former *particular* circumstances can be considered in detail, and the results can be interpreted in direct relation to the conditions which determine them. In the latter the peculiarities of individual cases have to be ignored, or at least subordinated to the common features of the group as a whole. The average height of the male adult determined for a very large group is not much influenced by the inclusion of the relatively few cases of men

who are six feet six inches in height. But, of course, a sufficient number of cases must be included in the group to make it reasonably certain that the average for the group is not unduly affected by the idiosyncrasies of one or two of its members. It follows, therefore, that group comparisons fail to show *large* differences, unless the groups are relatively homogeneous in themselves, and the factors to be compared in the groups do not suffer interference or disturbance from extraneous factors.<sup>1</sup>

Now, in this experiment, as will have been realized from what has been said in previous chapters, the control of disturbing factors was almost impossible. At the outset the investigators hoped that they would be able to show *directly* the utility of psychological methods by comparing the success of those who had taken the Institute's advice with those who had not. But, as extremely few children appeared to have acted upon this advice, other methods of comparison had to be found, and, in the sequel, the evidence of the value of psychological studies is relatively *indirect*. Difficulties were expected, of course; indeed, friends of the Institute, realizing the complexity of the problem and knowing something of the difficulties of follow-up, were perplexed to know how any proof of the value of psychological studies would be procurable from the occupational histories of young people. The investigators themselves were uncertain how much of their work would be fruitful in result; they had to travel hopefully, and in the end they have arrived. The only practical test of vocational advising lies in the correlation of advice with occupational success, and to achieve this aim it was necessary to adopt the methods that have been employed in this experiment.

As the records show, the Institute was distinctly successful in the important work of keeping in touch with the children of the experiment, though a more difficult task could hardly have been undertaken. An amazingly complex and varied mass of data was eventually obtained. Posts seemed to have been taken and given up without rhyme or reason; if reasons were given they were bad as often as they were good. Some children

<sup>1</sup> For example, the average height of a group of fifteen-year-old boys will usually be considerably greater than that of a group of thirteen-year-old boys; but if we are dealing with composite groups of public-school boys and slum children, of whom the proportions in each group cannot be determined, the difference may be greatly obscured.

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seemed as leaves blown hither and thither without aim or purpose; others were urged by ill-conceived ambitions to an equally unsettled career. Bad luck, trade fluctuations, removal of parents, restlessness—these and many other influences were at work in their lives to produce histories of employment in which it appeared almost impossible to disentangle contributory factors. It seemed very improbable that out of such a medley of conflicting impulses and influences there could emerge any evidence of the part played by a single factor, such as the suitability of the child for the work he had undertaken. The results that have accrued are therefore all the more remarkable.

### 2. PROOFS OF THE VALUE OF VOCATIONAL GUIDANCE

Common sense, of course, would lead one to expect that, in a choice between two surveys of the abilities of an individual—the one general and superficial, the other detailed and precise—the latter would give information of greater use in vocational guidance. Against this must be set the disinclination of the average man to believe that his future success *can* be foretold from a detailed knowledge of his abilities and achievements. However badly he may have progressed in his career, he seldom ceases to cherish the hope that something will eventually “turn up” to disprove the implication of his past failures. This disbelief in the possibility of forecasting an individual’s future success has had to be met by the demonstration, first, that there is a definite relation between the abilities and temperament of the individual and his achievements, and, secondly, that these abilities and temperamental traits can be determined accurately enough for purposes of forecast.

As regards the first of these, there is abundant evidence in the results already described that real suitability in work, as judged by efficiency, is associated with estimated suitability of the work, as judged by the advisers, in relation to the child’s apparent abilities and temperamental qualities. The study of employers’ reports in particular shows that the best reports are given mainly when the posts conform closely to the advice given.

The exact value of vocational forecasts is, however, difficult to determine, simply because there is no finality about the

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careers of young people, and even if they have not developed during the first few years of occupational life along the lines expected, it may be that the forecasts will be fully confirmed at a later stage. To be of most value, of course, follow-up studies should be prolonged to the stage when occupational success or failure can be established without reasonable doubt. In some cases this may require at least ten years—perhaps even longer. In few cases can success be adequately assessed in less than five years. Yet practical experimentation in the field (as contrasted with laboratory investigations) can seldom be carried on for such lengths of time, and in the present instance the longest industrial history extends over only four years, the average length being about three years.

The two most important criteria are those connected with (a) posts held continuously since leaving school and (b) employers' reports. In the former it was discovered that the posts most likely to be kept were those which, on the evidence of the child's vocational examination record, were considered the most suitable (p. 221). In the latter a consistent relation was found between estimated suitability of work and the employers' 'good' and 'bad' reports, 'good' reports being associated more frequently with posts of high congruity with advice, 'bad' reports more frequently with posts of low congruity with advice (p. 225). The general conclusion from these two sets of data is undoubtedly that judgments of suitability which are likely to be confirmed by subsequent results *can* be made; in other words, it is possible in some considerable measure to forecast vocational success. The other criteria—number of posts and length of tenure of posts—though more subject to the influence of disturbing factors, give similar results and suggest the same conclusions.

### 3. COMPARISON OF THE EXPERIMENTAL AND CONTROL GROUPS

One important subject, however, remains for consideration. The control group shows relations between efficiency in work and its suitability (as judged by the school conference) similar to those shown by the experimental group. But the most important of the criteria—posts held continuously and employers' reports—favour the experimental group much more

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clearly and definitely than the control group (pp. 222-226). In regard to the other criteria the differences between the experimental group and the control group are less marked, and in occasional instances in the detailed tables<sup>1</sup> the advantage lies apparently with the latter group. This at first may suggest to some that the advising of the control group is sometimes as good, or nearly as good, as the advising of the experimental group; or, to put it in another way, that some of the information available about the children of the control group is about as useful for the purposes of advising as the more detailed information concerning the experimental group. This, however, is certainly not the case generally, especially when the following reasons are taken into consideration.

It will have been realized that underlying the classification of the children and posts of the control group there has been one important factor—namely, the child's *wish*. This was negated by the school conference only when there were marked contra-indications, usually of a medical kind. The Institute's advice, on the other hand, was frequently contrary to the child's wishes. Thus the studies of the children in the control group bring out, on the whole, the relation between their success and the suitability of their work as *determined by their own wish* rather than by the systematic deliberations of the advisers. On the other hand, studies of the experimental group bring out a relation between success and *the Institute's judgment of suitability*, which in a considerable number of cases was *contrary* to the child's wish.

Now, the wish has clearly played a far more important part in determining, whenever a choice has been possible, the post which a child actually entered than the advice offered either by the Institute or by the school conference, and its effect upon such criteria as length of tenure of post will sometimes have been considerable. The consequence is that in the control group of children the effort to retain a post which they particularly desire operates in favour of the posts judged suitable (for the two are here almost identical), whereas in the experimental group the same effort is often made in a post judged unsuitable. This being the case, the significance of the results for the control group diminishes, while for the experimental group it is enhanced.

<sup>1</sup> But not in the summary tables (Chapter VIII).

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The results obtained for the experimental group, however, are not affected to the same extent by this factor. It is true that the child's wish was taken into account by the investigators, and that frequently the work recommended agreed with this wish, but the wish was not the determining factor. Of course, as already pointed out (p. 119), the best results accrued when the work found was in agreement both with the child's wish and with the judgment of suitability of work. There can be no doubt that, but for the cases where the child's wish was opposed to the judgment of suitability, the results for the experimental group would have been even better than they are. Moreover, since the wish was here a secondary consideration in framing the recommendations, the evidence is in favour of the Institute's judgments of suitability even more than of children's wishes. For if success or failure were in all cases determined by the children's wishes rather than by actual suitability of post, then the experimental group would have shown results markedly inferior to those of the control group.

Yet another factor tends to increase the importance of the results obtained for the experimental group. In this group there were no cases which could not be classified, the decisions and the information in all cases being adequate. In the control group, however, 18 per cent. of the cases could not be classified, owing to lack of information or to the absence of any definite opinion expressed by the school conference. Among these cases were a considerable number who had had frequent changes of work, the average number of posts held by these being 5.16, with an average length of tenure—strangely enough—of 5.16 months; and accordingly it may be supposed that their inclusion would have reduced the value of the averages for the control group. Certainly this appears to be the case so far as the boys are concerned. These children were generally those who came to the conferences with no plans and with no preferences of any sort, and it may be that without guidance they would experience greater difficulty in finding suitable employment than those who had definite plans. Their exclusion from the control group, then, only confirms what was said above.

It will be clear, therefore, that the crude differences disclosed by the tabulated comparisons between the experimental and the control groups do not in themselves indicate the intrinsic

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values of the two methods of procedure. The two groups are not in all respects comparable, and it is only when the position is analysed that the true extent to which the judgments of suitability of work are superior in the experimental group becomes clear.

Turning now to the general value of these results, we may observe that so far our analyses have been concerned with the value of the procedure *as a whole* rather than with the value of any particular part of it. It has not been possible up to the present to examine in detail the relation between a child's performance in the various psychological tests and his vocational success; the peculiar features of each child's career make it difficult to get together a group sufficiently large to enable satisfactory studies of this kind to be made. It would be helpful, for instance, to know how many of those who made a high score in, say, the mechanical ability test or the clerical test have been successful in the kind of work thought to be related to these tests. Perhaps the Institute may be able to report on these aspects of the experiment subsequently.

Meanwhile, although experience indicates that some parts of the total procedure were more valuable than others, it cannot be said that any are so unimportant as to be dispensed with. At one time it seemed as though the home visit meant a great expenditure of time and energy to little purpose; yet there were occasions when home circumstances played the chief part in deciding the issue. At other times the importance attaching to the school report, to the measures of general and special abilities, to the physical condition of the child, or to the observations of temperament and character diminished as some outstanding feature was found to dominate and to control the situation. Yet not one of these factors in the total situation could ever be totally ignored; each had something, however small, to contribute.

### 4. THE POSSIBILITY OF SHORTENING THE VOCATIONAL EXAMINATION

It will have been realized from what has been said in various parts of this book that vocational guidance is a highly complex problem, and that satisfactory advice can be given to a child

only when all the contributory factors are known. Hence it would seem essential that the study of the child should be as complete as possible, and the experience gained in this experiment certainly supports this view. During the examination, however, of the last batch of children (eighty-one cases) an attempt was made to give a recommendation after only part of the study of the child had been completed. A shortened series of selected tests was used, and the decisions were made *before* the home visit and before the results of the medical examination were known. The investigators found it much more difficult to express an opinion, and were not very confident that the views were soundly based. It was found afterward, in spite of a natural tendency to adhere to an opinion once it has been formulated, that only 52 per cent. of these provisional recommendations remained unchanged. Recommendations completely changed amounted to 8 per cent.; in these cases apparently the opinions were quite wrong. The remaining 40 per cent. of recommendations were modified in various ways, sometimes by the addition of suitable alternatives, sometimes by a change in the order of these alternatives. This suggests that the risk of error is considerable when opinions have to be expressed on limited information.

From time to time the desire has been publicly expressed for a short, simple, and at the same time reliable procedure by the aid of which large numbers of children can be advised in a short space of time. The Institute has naturally been attracted by the advantages of such a procedure, and has tried in various ways, quite apart from this experiment, to discover a suitable method and technique. Research workers in other countries, notably in Germany, have been interested in the same problem; but it is noteworthy that the most successful results have accrued only when the questions to be answered are those of vocational selection rather than of vocational guidance. In other words, when the vocational psychologist is asked to say whether or not a child is fit to become a teacher (or a solicitor, or a mechanic, as the case may be) he can answer this *single* question in a relatively short time; whereas to discover for the child which of all possible occupations *other* than teaching (or law, or engineering, etc.) he should attempt proves inevitably a lengthy procedure.

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Where the Institute has attempted to shorten its procedure it has been able to do so satisfactorily only when the children have already passed through some preliminary selective processes, such, for example, as a secondary school course successfully completed in specified subjects.<sup>1</sup> Here evidence is to hand of the presence of abilities already specialized to some degree, and the search for suitable scope for their expression becomes shortened. But the *general* practical procedure of vocational guidance does not seem capable of much shortening without considerable loss. An adviser, however skilful and experienced he may be, is not likely to feel confident about the suggestions he is able to make if the information he requires is restricted in amount and in accuracy.

Psychological tests have, it is true, immensely shortened the process of child-study; a judgment of general capacity can now be made with confidence after quite a brief examination, whereas records covering many months require to be considered when such tests are not used. Similarly, the prognosis of special abilities is becoming a short procedure compared with actual trial at the work itself, which would probably last months, and be besides a waste of effort when the child is unsuitable. But these are only aspects, though important ones, of the whole vocational guidance problem, and there can be no cutting down of the general procedure without seriously invalidating the results. In this experiment on the average at least ten hours—two school days—were spent on the problem of each child, and this would seem far too long for practical purposes.<sup>2</sup> How then can the work of vocational guidance become general?

The solution lies in the extension of the study over a longer period of time. The vocational problem is not one for rapid solution at the moment when the child is due to leave school. It may be that a *decision* is not called for until that time comes; but the consideration of the problem should begin much sooner, and the systematic collection of the information upon which the decision is to be based should be spread over the last few

<sup>1</sup> Numbers of secondary school and university students are privately tested at the Institute. Some preliminary results of 'follow-up' work are given in the Institute's *Journal* for January 1931.

<sup>2</sup> Even in the Institute's experiment in Fife, in which group tests are being more extensively used than in this experiment, the minimum time for each child is two hours for *each* examination, and in this case arrangements have been made to examine the child more than once before he leaves school.

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years of the child's school life. When this has not been done it is still possible, of course, for a trained adviser to study the problem of each individual and to make helpful suggestions, as the Institute has now done for many years past. But even this special intensive study of a child can be more easily and effectively carried out when detailed and systematic records of his development are available.

An outline scheme for the general extension of vocational guidance drawn up several years ago is given in the Appendix (p. 295). It envisages a gradual accumulation of data regarding each child to be advised while he is still at school, and an expert consideration of his problem when all the circumstances relative to it are known. The best time for this will usually be just before the school-leaving date arrives.

Meanwhile investigation into the details of procedure, and into the place and importance of each component part, must go on. This experiment has shown what sort of tests are suitable for children who leave school at fourteen years of age. The value of an assembling test of mechanical ability, for instance, is now more fully understood, and the part played by the perception of shape and form in this test and in other practical tests has been brought out more clearly than ever before. Concepts of 'practical ability' and of 'manual dexterities' have also undergone revision in the light of practical experience. In these and in many similar ways the experiment has been of great service.<sup>1</sup>

### 5. THE STAGE OF INITIATING VOCATIONAL GUIDANCE

As regards broader questions several important conclusions have been reached. The problem of advising children at the elementary school stage is seen to be more difficult in certain respects than it is at the secondary school stage, simply because the child of fourteen is still largely an unspecialized person, whereas the secondary school boy or girl of sixteen or seventeen frequently shows more definite signs of a vocational bent. There are, however, exceptions, and the difficulty often experienced in choosing a career by those leaving school at sixteen is usually due to the fact that no outstanding interests or abilities have

<sup>1</sup> For further discussion of details the reader is referred to the Institute's Reports already mentioned.

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begun to express themselves. This is frequently attributable to the circumstances governing the previous school-life, the opportunities for the discovery and development of important interests perhaps having been few in number and subordinate to other activities. In the case of the fourteen-year-old in this experiment the vocational problem has been one of selecting a more or less *specialized* occupation (at least as regards skill) for a child whose interests and activities have hitherto been mainly *general*; hence the emphasis on the specific needs of particular occupations. But one feels that this may prove too ambitious a project at this particular age, and that more rapid development will take place if 'vocational' guidance is recognized as in many ways contingent on 'educational' guidance—*i.e.*, the right choosing of school courses.

If ultimately the school-leaving age is raised to fifteen (and perhaps even if it is not) it is probable that between the ages of twelve and fifteen there will be provided a considerable variety of secondary or post-primary courses of study. The fundamental aim of such courses must be to broaden general culture; but the choice between different courses will often be made on the same general grounds as the subsequent choice of vocation. The problem of vocational guidance will then require to be dealt with in two stages.

First, there will be the choice of the most appropriate course of study from, for example, literary and linguistic courses, mathematical and scientific courses, commercial, technical (including arts and crafts), and domestic courses. The systematic study of the child's development between the ages of eight and twelve will provide data by means of which the choice can be effected. Each main group of studies will tend to be associated with a certain main group of occupations; and, without giving vocational training of a narrowly direct kind, they will be vocational courses in the best sense, in that they will bring out the child's bent and give it adequate opportunity to express itself.

The second stage arrives naturally at the termination of this vocational preparation, and the information accumulated during the period of more specialized work should prove very helpful in guiding the child into a suitable career. The range of possible occupations will have been reduced by the partial

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specialization implied by these selective courses, but there will still be a great number of possibilities to be considered, and in the choice temperament and character will often be as important as the special abilities developed and expressed during training. Such a procedure implies that proper provision should be made during this period of education to secure suitable records and studies of pupils from the vocational standpoint.

Already in some schools something on these lines is being done, and its extension should not prove difficult. The problem becomes relatively easier when processes of selection have been previously at work. Hence, if the methods by which candidates for admission to special courses are selected are satisfactory in the first place, guidance at the later stage should become a relatively simple matter.

Another point not without interest concerns the difficulty of interpreting records. The investigators in this experiment found it necessary to study again the individual's record after the lapse of three or four years. They found that they could not always see the reason for the recommendation actually made at the time, and concluded generally that this was due to the existence of some personality factor which was not easily expressed in records, and which therefore could not be re-created subsequently. This, however, may not always be the case; there may have been inconsistencies in the process of summing up such that a different conclusion might be reached on separate occasions. On the other hand, when the child was known to the investigator less difficulty was experienced in interpreting the records. Generally, then, it would seem that records kept for vocational purposes will be of most value when the person to whom they refer is known to the investigator. Normally this would be the case, since his services would not be enlisted on the basis of records alone; personal knowledge of the person to be advised should ideally form part of every guidance procedure.

### 6. THE TRUE NATURE OF VOCATIONAL GUIDANCE

Vocational guidance is not, and never can be, the literal interpretation of the square peg and round hole metaphor: it is not so inhuman. Even although its principles must be

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derived from the scientific study\* of human behaviour, its application is an art which requires a large endowment of patience, insight, and sympathy, as well as a wide experience and an adequate training. Studies such as these are necessary to lay the foundations of a more objective system of vocational advising, but they do not indicate a mechanistic conception of human life. Vocational guidance of the adolescent is equivalent to placing in his hands a chart by which to steer his ship on the sea of life. The country toward which he steers depends upon his strength, his ability, his courage, his mental and physical resources, his knowledge and experience. It is the privilege of the more experienced navigator to indicate the far-distant port and to set the most suitable course. The value of his advice will depend upon the extent to which he himself has charted the crowded seas, has studied the wrecks and derelicts dotting every route, and has seen how little or how much is accomplished by those who are ill-equipped for their journey.

The value of the experiment lies, therefore, in the extent to which it makes clear the nature of the problem, and shows how a necessary piece of social work which has been begun on an empirical basis may be extended on a more secure scientific foundation by the introduction of psychological methods of vocational guidance. With so much accomplished by the Institute with an experimental technique, one may feel sanguine about the future development of the work and its technical improvement. For these will most certainly come with increased public interest and practical application.





# APPENDIX

## I

### SOME SUGGESTIONS ON THE ORGANIZATION OF VOCATIONAL GUIDANCE IN SCHOOLS

THE following suggestions have been already published by the Institute, and are to some extent upheld by the results of this experiment. They are not intended to be regarded as a complete solution of the problem.

(1) In every school there should be one person whose recognized duties include the vocational guidance of the children. In elementary schools probably his chief work would occur just before the child is due to leave school, but in secondary schools the problem of specialization in studies would also engage his attention.

(2) It would be advisable, at any rate at first, to invite volunteers for duties of this kind, though reasonable time allowances (when ordinary school duties would be suspended) should be provided. It is probable that from one half-day to one whole day per week (according to the size of the school) would be sufficient.

(3) The teacher (vocational counsellor, careers master, or employment adviser, as preferred) should be able:

- (a) To discuss each case with his colleagues, obtain from them the information he needs, and arrange that it should be based upon reliable standards, such that interpretation is easy. (By arrangement with the head teacher the system of school records might be arranged in such a way that certain kinds of information could be readily obtained from the records.)
- (b) To check by independent inquiry and examination (when necessary) any reports or opinions which appear inconsistent among themselves or contrary to the child's general record.
- (c) To explore by special methods the child's specific abilities whenever necessary, either independently or with the assistance of the expert vocational adviser of his district (see (4) below).
- (d) To rate, with the assistance of colleagues, the child's temperamental and character traits.

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- (e) To obtain all information relating to health and physical development which the school medical service can provide.
- (f) To interview parents concerning vocational plans appropriate to their children. (This would normally occur at the school by invitation, but home visits should not be excluded.)

(4) The careers master should regard his duties as of great importance, should safeguard the validity of his tests by every means in his power, and especially should prevent them from becoming commonplace school exercises. He should recognize that his main duty is to study each child to an extent sufficient to justify the judgments he makes concerning the child's abilities. He should admit that he cannot hope to obtain detailed knowledge of the requirements of all occupations available in his district (though he should undoubtedly possess some). He will therefore welcome the assistance and co-operation of a visiting vocational adviser (or organizer) who is able to provide this special knowledge. The visiting vocational adviser should be a person who is expert in all aspects of vocational guidance. He should be trained in the methods of examination, in the technique of occupation analysis, and should have had experience of examining and advising children.

The visiting adviser should be responsible for the vocational guidance in all the schools in his district. This implies that he should have studied the local conditions, and should have carried out the analyses of the requirements of occupations to such a point that he can effectively utilize this knowledge in giving vocational guidance. Further, he should be responsible for instructing and training the careers masters in their special duties. The co-operation between the two should be such that the time required to be spent by the visiting adviser in discussing each case is reduced to a minimum. It is important, especially in doubtful cases, that a fresh and independent point of view should be brought to bear upon the problem. Hence the visiting adviser should participate in the examination of every child upon whom he passes an opinion. It would not be advantageous, however, for him to give a prolonged examination, for he would then be doing work which the careers master could do equally well and with greater convenience. The ideal arrangement seems to be one by which the careers master carries the general examination of the child as far as he possibly can, so that only in doubtful cases would it be necessary for the visiting adviser to give a prolonged examination. Supposing he spent one hour over the difficult cases, and only ten to fifteen minutes over those cases (they

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are fairly numerous) which settle themselves, he could deal effectively with about 2000 children in a year. Assuming that systematic observations and records for each child were maintained throughout his school life, the total time required to be devoted to the study of each child by all concerned would not usually exceed three hours, and might eventually be much less. This would be distributed in such a way that the most effective use would be made of the information which, on the one hand, the careers master is, by general consent, in the best position to obtain, and which, on the other, the impartial visiting expert alone can contribute.

(5) The duties of the visiting expert adviser would be as follows:

- (a) To train the careers masters in his district by lectures, demonstrations, and individual tuition (in the early stages).
- (b) To plan the scheme of examination, record forms, and all the details relating to the advising of each child. In this connexion the use of specific tests for work of particular kinds would be considered in relation to the needs of the district.
- (c) To direct the careers master in his inquiry into the abilities of each child, and in doubtful cases to complete the examination himself.
- (d) To apply all published analyses of occupations to the study of those in his district, and when possible to carry his own studies of occupations to that degree of completeness necessary in his immediate problems. Hence to arrange an appropriate scheme of examination.
- (e) To organize such school conferences as it may be deemed necessary to hold. It is possible that the close co-operation of the visiting adviser and the careers master will render a conference of representatives unnecessary, and it may be more effective to invite the parent to a school conference consisting only of the two advisers. At the same time the duties of the Care Committees, as at present constituted, have obvious links with the problems of vocational guidance, and the possibility of co-operation between the visiting adviser and the Care Committees should not be overlooked. Similarly the organization of after-care is an allied problem. It would be helpful, therefore, if the visiting adviser could participate in these other aspects of child welfare work, but the extent to which this would be possible would depend upon the size of his district and the needs of the

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schools and children under his care. Yet it is clear that visits to employers, for example, would be an important means of enabling him to carry out the necessary analysis of occupations.

(6) The relation between the visiting adviser and the careers master should be that of co-workers, but the former should be the recognized expert and organizer. It should not be regarded as the latter's right to use any or no tests at his own discretion, but rather they should be subject to the visiting adviser's approval and general scheme. Consequently the adviser should be the originator of new lines of inquiry, of experimentation with new tests, and of work upon the development of new standards.

But the visiting adviser will not usually have time to carry out research work. It will therefore be advisable to have some central organization<sup>1</sup> for inquiry into new forms of tests, by the aid of which the development of better methods may be secured. Such a body as the National Institute of Industrial Psychology possesses in its vocational section both the experienced investigators and the special facilities needed for such work.

<sup>1</sup> This organization should also, to avoid duplication, prepare the scheme of examination (see 5(b) above).

## APPENDIX

### II

#### GROUP TEST OF INTELLIGENCE <sup>1</sup>

(SERIES 34)

**DO NOT TURN OVER THIS PAGE UNTIL YOU ARE TOLD**

Fill in the following at once :

Name : Surname..... Christian Names.....

Age ..... years..... months

Date .....

School ..... Class .....

#### READ THE FOLLOWING CAREFULLY

This book contains a number of questions. Most of them are easy and you will enjoy doing them. A few are rather hard, but *you* may succeed, so try them all. Try to answer the questions as quickly as you can ; so do not spend too much time over those that puzzle you : you may find others that you can do better. Some of the questions are answered for you to show you how the others should be done. Notice that some of the tests occupy more than one page. When you see the words "PENCILS DOWN" you will know that you have come to the end of the test.

NOW is the time to ask questions and make all preparations. Do you understand what you have to do ? Is your pencil sharp enough ? You do not need either pen, ruler, or indiarubber. If you want to ask any question ask it NOW. If not, wait until you are told to begin. The Instructor will tell you when to pick up your pencils and begin. Listen carefully when he reads the instructions at the beginning of each test.

<sup>1</sup> This test consists of nine parts, selections from which are shown. They are bound together in a booklet, the first page of which is reproduced on this page. The children are tested in a group, and each is given a test booklet and a pencil. This test was given to all children except the first hundred, to whom another test (the Institute's Group Test, Series 33) of a more purely linguistic nature was given. The latter, however, was found to be not entirely suitable to children from elementary schools.

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## TEST I<sup>1</sup>

(Time allowed, 3 minutes.)

(The instructions are to be read aloud by the Instructor.)

Here is a drawing in which something is wrong:

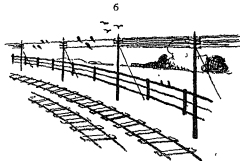
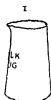
*Funnel missing.*



*No coupling-rod.*

Look at the picture on the left. It is easy to see that the funnel of the engine is missing and that there is no coupling-rod between the wheels. The picture on the right shows you the engine as it should be. The following pictures have also something wrong with them. You are asked to *draw something* to make the pictures correct, or, if you like, to *write a word or two* saying what you think is wrong with the picture.

In the engine on the right the missing parts have been drawn; on the left the words have been written. You may use either method.



**PENCILS DOWN**

<sup>1</sup> The complete test consists of twelve items.

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### TEST II

(Time allowed, 4 minutes.)

Read every question carefully and do exactly what is asked as *quickly as you can*.

1. Print the letter M in each of these drawings:



2. In this clock-face show the position of the hands at half-past eight:



3. Write in their reverse order the letters which are in this row:

t w e o i u y q r

(The first two are done.) r q

5. If the word 'macaroni' has more letters than the word 'elephant' cross out the first letter of the word 'RAT.' If it has less letters cross out the last letter of the same word. In any case cross out the middle letter.

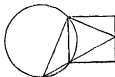
6. Draw a circle and write the figure 3 *both* inside this square, but in such a way that the 3 is also inside the circle.



7. Draw a capital N (but only one) so that it lies inside two circles which do not cut one another.



10. Write the figure 1 so that it lies in the square and the triangle but not in the circle. Write the figure 2 so that it lies in both the triangle and the circle but not in the square; and the figure 3 so that it lies in all three of them.



PENCILS DOWN

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## TEST III<sup>1</sup>

(Time allowed, 1½ minutes.)

(The instructions are to be read aloud by the Instructor.)

On this page and the next there are some pictures arranged in sets of three or sets of four. Each set describes a series of happenings which can only take place in a certain order. You are to show what this order is by numbering the pictures 1, 2, 3, or 1, 2, 3, 4, as the case may be.

For example, here are some pictures :



2



1



3

The middle picture, which is numbered 1, shows Jack and Jill going up the hill.

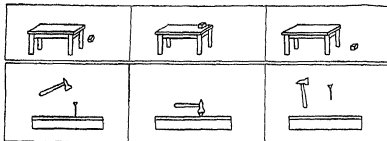
Picture number 2 shows Jack and Jill at the well.

Picture number 3 shows Jack and Jill returning home.

The numbers (1, 2, 3) show the proper order of the pictures.

Now put numbers on these pictures in the same way to show what their proper order should be.

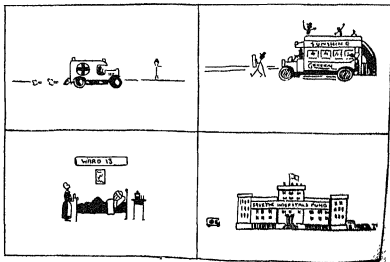
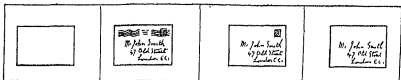
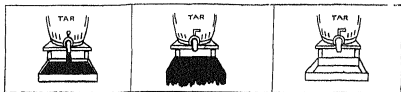
Remember that they are in sets of three or sets of four.



<sup>1</sup> The complete test consists of eleven items.



# APPENDIX



PENCILS DOWN

## METHODS OF CHOOSING A CAREER

### TEST IV

(Time allowed,  $7\frac{1}{2}$  minutes.)

1. Give the names of *five* different instruments with which music can be made.

1.                      2.                      3.                      4.                      5.

2. If you were given *five* pieces of wood cut to the right size and told to make an open box (no lid) what else would you require?

1.    2.

3. Name *two* common things which are small, round, flat, and thin, one being made mainly of silver, the other mainly of copper.

1.    2.

8. Give the names of *four* common objects which are *always* red in colour.

1.                      2.                      3.                      4.                      .

9. Give the names of *three* different sorts of places where you have to pay money *before* you are allowed to go inside. For example, Tube station.

1.    2.    3.

10. Name *some* of the things people should not do when they travel by train, and which they have frequently to be warned not to do. Example, getting off before the train stops.

1.  
2.  
3.  
4.  
5.

### PENCILS DOWN

### TEST V

(Time allowed, 2 minutes.)

(The instructions are to be read aloud by the Instructor.)

Here are three words in capital letters: DAISY, VIOLET, DAFFODIL, and here are four words in small letters: book, rose, wall, garden.

Notice that the first three words (in capital letters) are names of flowers.

Notice also that of the next four words (in small letters) only *one* is the name of a flower: rose is the name of a flower. It is picked out by drawing a line under it.

Here is another example:

SPARROW, CHICKEN, SWALLOW . . rat, mouse, duck, cow.

'Duck' is underlined because it is the only word in small letters

## APPENDIX

which, like the first three words (in capital letters), is the name of a bird.

Now do these in the same way. In each example underline one word only.

Do not write anything.

- |                                  |       |   |
|----------------------------------|-------|---|
| 1. HORSE, CAT, DONKEY            | .. .. | Fish, cart, woman, dog.                 |
| 2. CLASSROOM, PENCIL, ARITHMETIC |       | Water, square, desk, spot.              |
| 3. FATHER, COUSIN, AUNT          | .. .. | Sister, policeman, postman, friend.     |
| 18. CLERGYMAN, TEACHER, ACTOR    | ..    | Tailor, grocer, ironmonger, auctioneer. |
| 19. LEGS, WINGS, FINS            | .. .. | Oars, ropes, rudders, seats.            |
| 20. DAY, PAY, WAY                | .. .. | Bay, night, money, owe.                 |

PENCILS DOWN

## TEST VI

(Time allowed, 2 minutes.)

(The instructions are to be read aloud by the Instructor.)

GOOD is to BAD as *white* is to .. *clean, black, wicked, red.*

GOOD and BAD are printed in capital letters. *White* is printed in small letters just like the four other words also printed in small letters. Now GOOD and BAD have opposite meanings, and so have *white* and *black*. The word '*black*' is underlined to show that white and black are opposite, just as GOOD and BAD are opposite.

In the next example you see the same sort of thing again, but this time the pairs of words are not opposite in meaning.

BAKER is to BREAD as *tailor* is to .. *tailoress, cake, man, clothes.*

*Clothes* is underlined because the *tailor* makes *clothes*, just as the BAKER makes BREAD. In other words, the relation between *tailor* and *clothes* is the same as that of BAKER and BREAD.

Now do these in the same way. In each example underline *one* word only.

- |   |       |                                       |
|---|-------|---------------------------------------|
| 1. HIGH is to LOW as <i>left</i> is to        | .. .. | <i>hand, right, wrong, remainder.</i> |
| 2. PRINCE is to PRINCESS as <i>king</i> is to |       | <i>duchess, crown, queen, royal.</i>  |
| 3. FIRE is to HOT as <i>ice</i> is to         | .. .. | <i>water, solid, ice-cream, cold.</i> |

## METHODS OF CHOOSING A CAREER

18. SILVER is to SPOON as china is to .. India, England, cup, clay.
19. THRIFT is to EXTRAVAGANCE as  
wisdom is to .. .. . economy, riches, folly,  
praise.
20. HONESTY is to STRAIGHT as dis-  
honesty is to .. .. . wrong, illegal, crime,  
crooked.

PENCILS DOWN

### TEST VII

(Time allowed, 6 minutes.)

Here is something different. The questions have been printed in various unusual ways. In this example the words are in the wrong order:

? you have toes many How. The correct answer is (cabbage, ten, black).

The correct answer is *ten*, which is underlined.

Now underline the correct replies to the following questions, which have all been printed in an unusual manner:

1. tahW ruoloc era seirrebwarts? The correct reply is (sour, large, red).
2. ? yadnuS erofeb semoc keew The correct reply is (Saturday, August, Monday).  
eht fo yad tahw
3. ? Selcatceps raew snosrep The correct reply is (all, some, none).  
ynam od.

In the following statements put numbers to show the proper order of the words. This one is done for you:

the tram until alight do not stops. (Do not alight until the tram stops.)

5 6 4 3 1 2 7

9. Sweetly fishes sing, horses easily cry, babies swiftly run, birds swim loudly.

10. Is a mineral a copper goat and is a vegetable an animal a potato is.

PENCILS DOWN

### TEST VIII

(Time allowed, 3 minutes.)

Look at this sentence:

PRETTY means the same as LARGE, BEAUTIFUL, GARDEN, MUSIC.

Only one of these four words means the same, or nearly the same, as the first word in the sentence. In this case BEAUTIFUL is the correct

## APPENDIX

word, and so it is underlined. In the following sentences pick out, and underline, the word whose meaning is most nearly that of the first word of each sentence.

- |                   |   |   |
|-------------------|---|---|
| 1. AGED           | means the same, or<br>nearly the same, as | STRONG, DARK, OLD, HAPPY.                                 |
| 2. DAMP           | " "                                       | DUSTY, WET, GREEN, ABOVE.                                 |
| 3. SLENDER        | " "                                       | STOUT, SHORT, CRUEL, SLIM.                                |
| 4. PORTION        | " "                                       | PART, GAME, COLOUR,<br>EATABLE.                           |
| 5. HUMBLE         | " "                                       | ARROGANT, LOWLY,<br>CONCEITED, LAZY.                      |
| 6. VARIABLE       | " "                                       | UNIFORM, CHANGEABLE,<br>UNALTERABLE, MIXED.               |
| 19. INDULGE       | " "                                       | REPLACE, EXTRACT,<br>PROLONG, HUMOUR.                     |
| 20. HETEROGENEOUS | " "                                       | GELATINOUS, MISCELLA-<br>NEOUS, GENEALOGICAL,<br>IGNEOUS. |

### PENCILS DOWN

### TEST IX

(Time allowed, 9 minutes.)

Look at these five words:

ounce      pound      ton      stone      hundredweight

The word 'stone' is underlined to show that if the five words were put in order of size (instead of being in any order) it would be the *middle* word.

Look at these five numbers:

1      4      5      2      3

The number 3 is underlined to show that it would be the *middle* number if the numbers were put in order of size.

Now do these examples by underlining the word or the number which would be in the *middle* if they were put in order of size.

- |      |            |            |        |          |          |
|------|------------|------------|--------|----------|----------|
| 1—8. | sixpence   | half-crown | crown  | florin   | shilling |
|      | foot       | inch       | mile   | furlong  | yard     |
|      | paragraph  | book       | page   | sentence | word     |
|      | twenty-two | fourteen   | twenty | sixteen  | eighteen |

3	9	6	15	12
7½	9	4½	6	3
½	¼	⅛	½	⅛
¾d.	4d.	1s.	7d.	1½d.

Show which is the correct answer to the following questions by underlining the appropriate word or words:

17. C. is west of B.; B. is west of A. Therefore A. is (north, south, east, west) of C.

## METHODS OF CHOOSING A CAREER

18. My birthday falls on 27th March, and I am just four days younger than my cousin. April 1st falls on a Friday. On what day of the week does my cousin's birthday fall?

(Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.)

20. The message "Are you in pain?" was sent in code like this:

Bsf zpv jo qbjv?

Write the corresponding code letters underneath these letters of the alphabet:

b c d e f g h

Write this message in the same code:

"See the little girl catch a butterfly."

# APPENDIX

## III

### CLERICAL TEST <sup>1</sup>

**DO NOT TURN OVER THIS PAGE UNTIL YOU ARE  
TOLD TO DO SO**

Please fill in the following:

Name..... Age.....years.....months.

Date.....

1. Read this page carefully. Do not look at any other page until you are asked to do so.

2. The question paper contains various tests, each consisting of a number of short problems.

3. The examiner will call out the name for each test as you are to begin it: *see that you are doing the right one. But do not turn over to the next test until the examiner tells you*, and do not turn back to any test after you have finished it.

4. In answering the questions you will seldom have more than one word to write, and *no rough working is allowed*.

5. You are unlikely to be able to finish the whole of any test. Work as fast as you can. Do not lose time by spending too long over any one problem; if you find it difficult go on to the next problem.

6. If there is anything you do not understand in the above instructions, ask about it *now*. No questions are allowed after the test starts.

#### FOR EXAMINER'S USE ONLY

Test		Mark
1	Oral Instructions . . .	
2	Classification . . .	
3	Arithmetic . . .	
4	Copying . . .	
5	Checking . . .	
6a	Filing . . .	
6b	„ . . .	
7	Problems . . .	
Total . . .		

<sup>1</sup> Only selections from this test are here given.

# METHODS OF CHOOSING A CAREER

## TEST I

### ORAL INSTRUCTIONS<sup>1</sup>

I am going to read you some questions, and you are to write down the answers on the paper in front of you. This is to see how good your memory is, so even if you forget what I have said ask no questions. I shall read each question only once, so listen very carefully.

1. Mr Walker, whose telephone number is City 5646, rang up to ask for an appointment at 3.15 on Thursday.

(a) What was his telephone number and exchange?

(b) For what time did he want an appointment?

3. A boy was told to go to the station and get a return ticket to Birmingham, then to go on to a tobacconist and buy a packet of Gold Flake cigarettes, and then to go to a post-office and buy a dozen penny stamps.

(a) What was the first thing he was told to get?

(b) What was he to get at the last place?

7. A clerk was asked to refer to two entries in her ledger. The first was in May 1923, when Mr Peters paid £35 10s., and the second was in November 1924, when Mr Evans paid £17.

(a) What was the amount in the first entry?

(b) What was the date of the second entry?

## TEST II

### CLASSIFICATION<sup>2</sup>

(Time allowed, 2½ minutes.)

A man kept his accounts under six headings. On this page there is a column for each of the headings, with the name written above it. Work down the list of things which the man bought, and put a tick in one of the columns to show under which heading each item should be classed. The first two items are done for you as examples. Be careful to put the tick exactly on the right line.

	Food	Travelling Expenses.	Clothing.	Amusements.	Heating and Lighting.	Sundry other Expenses.
Postage Stamps ..						✓
Baker (1 week) ..	✓					
Veal Cutlets ..						
Season Ticket ..						
1 lb. Biscuits ..						
Fire Lighters ..						
New Hat ..						
Income Tax ..						
Theatre Tickets ..						
	Food.	Travelling Expenses	Clothing.	Amusements.	Heating and Lighting.	Sundry other Expenses.

<sup>1</sup> There is no fixed time-limit for this test.

<sup>2</sup> The complete test contains forty-two items.



# APPENDIX

## TEST IIIA

### ARITHMETIC<sup>1</sup>

(Time allowed, 2½ minutes.)

Add up the following sums, and put the answer in the space provided. Work as quickly as you can; do not stop to check the figures.

563  
785  
919  
84  
107  
436  
49  
197  
836  
52  
370  
28

---



---

£	s.	d.
242	17	2½
3	15	7
319	2	0
	19	9½
78	2	5

---



---

## TEST IIIB

(Time allowed, 2½ minutes.)

	£	s.	d.	
Subtract	7477	9	6	Divide
	5592	4	9½	7)1137381

---



---



---



---

Multiply 286793  
× 8 Etc.

---



---

<sup>1</sup> The complete test contains fourteen sums.

# METHODS OF CHOOSING A CAREER

## TEST IV

### COPYING<sup>1</sup>

(Time allowed, 2½ minutes.)

Write out the names and letters and figures on the left of the page in the empty space on the right of the page. Copy each line right across before beginning the next. Be careful to keep the items exactly the same and in the right columns. The first two have been done as examples.

Miss S. Boges	L		20	Miss S. Boges	L		20
Mrs T. Klyne		NO	99	Mrs T. Klyne		NO	99
Mr R. Culing	OO		11				
Lady Isobel Peters	KB		8				
Mr K. Grant		TH	2				

## TEST V

### CHECKING<sup>2</sup>

(Time allowed, 3 minutes.)

The items in Column A have been copied out in Column B, but some mistakes have been made in copying. Compare the two columns, and put an X in Column C against any item which has not been copied out correctly; the first two mistakes are marked. Work as quickly and accurately as you can, and note that mistakes have been made in the names and titles as well as in the figures.

COLUMN A				COLUMN B				COLUMN C
	£	s.	d.		£	s.	d.	
Mr Tom Roberts .	12	2	5	Mr Tom Roberts .	12	2	5	.....
Mrs B. S. Van Ben .	43	18	2½	Mrs B. S. Van Ben .	43	18	2½	..... X .....
Mr Harvey .		6	7	Mrs Harvey .		6	7	..... X .....
Miss Kitty Davis .		3	3 0½	Miss Kitty Davies .		3	3 0½	.....
Mr Harold Dixon .	127	19	7	Mr Harold Dixon .	127	19	7	.....
Mr Urquhart .		2	6	Mr Urquhart .		2	6	.....
Mrs Valentine .	59	19	0½	Mrs Valentine .	59	9	2	.....

<sup>1</sup> The complete test contains twenty-two items.

<sup>2</sup> The complete test contains forty-seven items.

# APPENDIX

## TEST VIA<sup>1</sup>

### FILING

(Time allowed, 3 minutes.)

The numbers in Group 2 are arranged in order of increasing size. You are to show where the numbers in Group 1 fit into Group 2. Each number in Group 1 has a letter before it. Look exactly where it fits into Group 2, and then draw a line and write its letter there. The first three (A, B, C) have been done as examples. A 54203 comes after 53997 and before 55026, so a line and an A is put between them. Now start with D 44554. Be very careful to put the lines exactly in the right place.

#### GROUP 1

A 54203  
B 35545

C 60693  
D 44554

E 38182  
F 61954

#### GROUP 2

	30987	50176	61452
	31264	51895	61523
	31289	52992	61832
	32111	52999	61945
	32897	53071	62000
	33303	53435	62010
	33471	53550	62100
	33765	53861	62465
	33928	A—53997	62598
	33982	55026	62893
B—	35543	55099	62901
	35687	55768	63324
	35996	55783	63397
	36071	56001	63409
	38128	56399	63487
	38281	56479	63523
	40744	56974	64465
	41193	57286	64654
	41198	57767	64746
	41226	57912	64974
	41785	58002	64989
	41911	58074	65002
	43820	58123	65020
	44154	58132	65202
	44544	58166	65575
	45455	58295	65998
	46123	58774	66435
	46776	59100	66453
	46959	60060	66576
	46987	C—60684	66657
	46989	60793	66779
	50010	60799	66841
		60806	66953

<sup>1</sup> In the complete test twenty-three numbers are to be filed

# METHODS OF CHOOSING A CAREER

## TEST VI<sup>1</sup>

### FILING

(Time allowed, 3 minutes.)

The names in Group B are arranged in alphabetical order. You are to show where the names in Group A fit alphabetically into Group B. Each name in Group A has a number before it. Look exactly where it fits into Group B and then draw a line and write its number there. The first three (1, 2, 3) have been done as examples. No. 1 "Ades" comes after "Adeny" and before "Adeson," so a line and a 1 is put between them. Now start with 4, Adnams. Be very careful to put the lines exactly in the right place.

#### GROUP A

1 Ades	3 Absit	6 Aberconway
2 Abati	4 Adnams	7 Adie
	5 Addey	

#### GROUP B

	Aaron	Achilles	Ades
	Aaronberg	Achurch	Adis
	Aaronovitch	Ackerman	Adkin
	Aarons	Ackford	Adkins
	Aaronsen	Ackroyd	Adleman
	Abady	Acland	Adler
	Aban	Aclonge	Adley
	Abate	Acres	Adlington
2	Abatt	Acton	Adrans
	Abbey	Acworth	Adola
	Abbiss	Adacker	Adolf
	Abbott	Adair	Adolph
	Abel	Adaire	Adolphi
	Abelman	Adam	Adson
	Abelson	Adamas	Adstead
	Abercorn	Adamson	Afa
	Abercrombie	Adcock	Affleck
	Abercromby	Adcocks	Afia
	Aberdare	Adderley	Afriat
	Aberfeldt	Adderson	Again
	Abernethie	Addie	Agambar
	Aberthaw	Addinett	Agar
	Abery	Addington	Agate
	Abind	Addinsell	Agazarian
	Abinger	Addis	Agerup
	Abliitt	Addison	Aggis
	Abney	Adeana	Aggs
	Abraham	Adeane	Agius
	Abramson	Adele	Aglen
	Abros	Adella	Agnes
3	Acacia	Adelman	Agran
	Achard	Adeny	Agrell
	Achew	1— Adeson	Agvett
			Ahan

<sup>1</sup> In the complete test twenty-three names are to be filed.

# APPENDIX

## TEST VII

### PROBLEMS

(Time allowed, 6 minutes.)

Do these problems in any order you like. If you find one difficult, go on with the others and come back to it later. All are quite straightforward; there are no 'catches.'

1. Any correspondence on lighting has to be sent either to Mr Jones or to Mr Smith. Any correspondence on heating has to be sent either to Mr Smith or to Mr Robinson. A joint estimate for heating and lighting arrives. To whom should it be sent? *Answer*.....

4. The following numbers have been regularly arranged in a certain order. Discover what this order is and then write in the brackets the two numbers that follow next in each row:

3	6	9	12	15	( )	( )
128	64	32	16	8	( )	( )

5. Write the number of pence in a shilling in the second bracket, the number of shillings in a pound in the third bracket, and the result of multiplying these two numbers together in the first bracket: ( ) ( ) ( ).

16. In a certain code A is called 1, B is called 2, C is called 3, and so on through the alphabet. How would you write CHIEF? ( ). What would 25138 mean? ( ).

17. Arrange each of the following groups in order of size. Number the items, beginning with the smallest and marking it 1, and ending with the largest and marking it 4. The first is numbered as an example. Do the same with each line.

(i)	2 box	1 match	3 pocket	4 coat
(ii)	.....town	.....street	.....county	.....building
(iii)	.....second	.....day	.....minute	.....hour

19. Fill in the missing figures in the brackets of the following addition sum:

	4	3	6	( )
	5	( )	5	4
Total	9	8	1	6

20. Underline the one word in the bracket needed to make the following sentence true:

C is west of B: B is west of A. Therefore A is (north, south, east, west) of C.

# METHODS OF CHOOSING A CAREER

## SUPPLEMENT TO CLERICAL TEST

### SPELLING<sup>1</sup>

Many of the following words are incorrectly spelt. UNDERLINE THE CORRECT ONES, and REWRITE THE INCORRECT ONES with the proper spelling.

- |                    |                      |
|--------------------|----------------------|
| 1. Beside .....    | 5. Immediately ..... |
| 2. Recieve .....   | 6. Destingish .....  |
| 3. Usualy .....    | 7. Inteligent .....  |
| 4. Practicle ..... | 8. Risponsable ..... |

## SUPPLEMENT TO CLERICAL TEST

### GRAMMAR<sup>2</sup>

In SOME of these sentences the grammar is wrong. Cross out the words that are wrong, and if any correction is necessary write it in the line at the right. (Do not write the whole sentence.) If the sentence has nothing wrong put a tick against it.

#### EXAMPLES

She said she would learn him how to do it..... teach.....

I asked him to come quickly..... ✓.....

She will sit between you and I..... me.....

1. That does not affect me.....
2. I told him to lay down on the bed.....
3. I walked quick but arrived rather late.....
4. The boys have done their work well.....
5. There was many nice things to eat.....

<sup>1</sup> The complete test contains forty words.

<sup>2</sup> The complete test contains twenty sentences.

## APPENDIX

### IV

#### GROUP TESTS FOR RECOGNITION OF FORM RELATIONS AND MEMORY OF DESIGNS

##### INSTRUCTIONS TO EXAMINERS

###### I. FORM RELATIONS

Before the subjects turn to Test I describe the general nature of the test.

Explain that at the top of each page are five drawings, out of each of which a piece has been cut. The cut-out portions have been placed below the line along with other pieces which do not belong to the drawings and which do not fit. All are numbered, and the object of the test is to find the five numbered pieces which if 'moved up the sheet' would complete the drawings in the top row. The numbers of the corresponding pieces are then pencilled on the squares. *Emphasize that the part cut away is bounded by a dotted line. Illustrate with models or by drawing on a blackboard*, and be sure that the numbering of the drawings in relation to the pieces is clearly understood. Then give Test I.

Before giving Tests II and III point out that some of the pieces may have to be *turned round* (i.e., revolved in the plane of the paper) before they will fit into the figures in the top row. Illustrate 'turning round' by rotating one of the models used for demonstration. Similarly, in Test IV explain that some pieces may have to be *turned over* (as one would turn over a penny from 'heads' to 'tails'), and in Test V that they may have to be turned both *round* and *over*.

In Test VI explain that *two* pieces are required to complete each square, and that no piece may be used more than once. None of the pieces requires to be turned over, but some may have to be turned round.

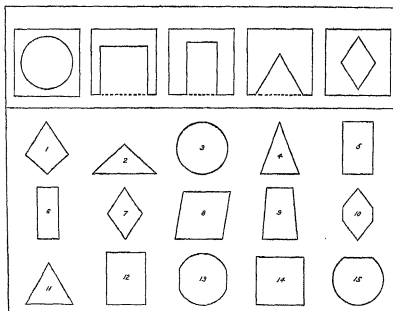
In Test VII explain that the drawings represent 'solid cubes' instead of 'flat squares,' but that the same thing is to be done. Remind the children that some of the pieces may also have to be manipulated before moving them up into place. One piece only is required for each cube.

In Test VIII explain that it is like Test VII, but that two pieces are required for each cube.

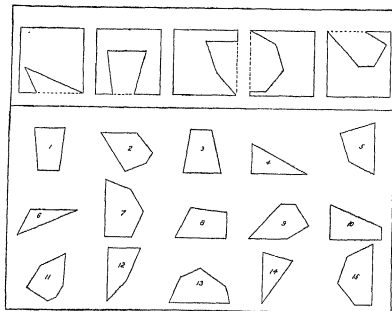
###### Time Allowed

TESTS I and II . . . . .	1 minute each
TESTS III, IV, and VII . . . . .	1½ minutes each
TEST V . . . . .	2 minutes
TESTS VI and VIII . . . . .	5 minutes each

# Test I



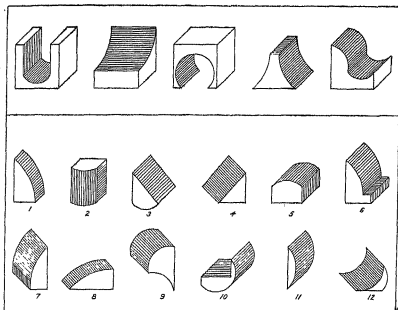
# Test IV





# APPENDIX

## Test VIII



### 2. MEMORY FOR DESIGNS

Explain that a series of diagrams will be shown singly for a few seconds, and that one minute will be allowed in which to draw each of them from memory. Emphasize the shortness of the exposure. Show design 1 and analyse it, pointing out that it contains a rectangular, or square-cornered, figure and an M-shaped line with two tails at the sides. Now leave the design exposed for ten seconds. Remove the design, and allow up to one minute for drawing. Expose the other designs separately for ten seconds, but give no preliminary analysis after the first one. Allow one minute for drawing in all cases unless all the subjects finish in less than one minute. The designs are to be drawn in the spaces on the back of the booklet.

#### Scale of Marks

(Maximum score, 52.)

##### Test 1

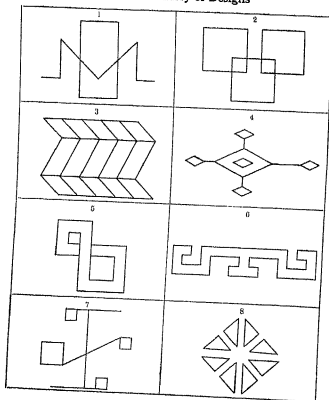
- For rectangle in approximate form (*i.e.*, height greater than breadth) . . . . . 1 mark  
 For M in correct form (*i.e.*, centre point level with tails) . . . . . 2 marks

# METHODS OF CHOOSING A CAREER

For M in partly correct form ( <i>i.e.</i> , centre point not level with tails)	1 mark
For two tails	1 mark
For correct sloping of lines ( <i>i.e.</i> , outer lines of M vertical)	1 mark
For correct placing of M:	
(a) sloping lines bisecting rectangle's sides	1 mark
(b) M not extending above or below central half of rectangle	1 mark
Total	<u>7 marks</u>

The other diagrams are scored in a similar way.

## Test for Memory of Designs



## V

## SPELLING (DICTATION)

## GRADED VOCABULARY TEST

*Age*

9. Rough, raise, answer, several, towel.
  10. Surface, pleasant, succeed, beginning, accident.
  11. Decide, business, practical, quantity, knuckle.
  12. Distinguish, experience, intelligent, artificial, peculiar.
  13. Luxurious, conceited, treacherous, descendant, precipice.
  14. Virtuous, memoranda, assassinate, embarrassing, tyrannous.
- 

Each child should have a long, narrow strip of paper and a suitable pencil. In dictating the list each word should be pronounced separately. The enunciation should be quite distinct and moderately slow, without, however, any dislocation of the syllables. The words should be repeated once after fifteen seconds, but are not to be enshrined in any illustrative context. The next word should be given as soon as all the pupils appear to be ready, but in no case should the time allowed for writing any word exceed half a minute.

*Scoring.* One mark is awarded for each word correctly spelt. To find the total score, take twice the number of (crucial) words actually dictated and rightly spelt, and add to them the number of the easier words (ten words for each year from age five inclusive) which were not themselves dictated because presumably known.

# METHODS OF CHOOSING A CAREER

## VI

### ARITHMETIC

#### A. UNGRADED WRITTEN TEST: ADDITION<sup>1</sup>

92	45	36	84	46	23	78	96	34	62
27	37	93	78	92	64	23	89	62	59
54	98	52	53	79	58	92	68	59	77
95	76	34	69	48	25	35	74	86	86

The children work the sums on the printed sheets. The time-limit is five minutes. The measure of ability is the number of columns correctly added in the period allotted.

*Scoring.* One mark is given for every correct figure in the answer, counting the 'hundreds' as part of the 'tens' figure (*i.e.*, maximum marks: two for each sum). To facilitate marking the sums are printed in rows of ten, so that for each line of correct answers the child scores exact marks.

#### B. GRADED ORAL TEST: MENTAL

*Age 8.*

1. How many penny stamps can I buy for 7s.?
2. Tommy collected 32 tram tickets. Eighteen are white and the rest are pink. How many pink ones has he?

*Age 9.*

3. I have been for a week's holiday. I spent 6d. a day while I was away. How much have I left out of 4s.?
4. My bookshelf is  $3\frac{1}{2}$  ft. long. How many books will it hold if each book is 1 in. thick?

*Age 10.*

5. If apples were 4 for 3d. how many could I buy for 3s.?
6. My brother is 21 years old. I was born when he was 10. Add both our ages together.

*Age 11.*

7. Write down 2.25 as a vulgar fraction in its lowest terms.
8. My neighbour drinks  $\frac{1}{2}$  pint of cider at dinner and  $\frac{1}{4}$  pint at supper. How many days will it take him to drink 7 gallons of cider?

<sup>1</sup> The complete test contains fifty additions.

## APPENDIX

### Age 12.

9. What fraction of £1 is a third of 1s.?
10. The church is 50 ft. away, and I step  $2\frac{1}{2}$  ft. In how many steps can I get to the church?
11. How many pounds and ounces are there in .75 of 2 lb.?
12. I bought a football for 12s. and sold it for 15s. What was my gain per cent.?
13. Divide 3s. between 2 boys so that one has 8d. more than the other.

### Age 13.

14. What is the average of 6 in., 7 in., 9 in., and 1 foot?
15. What is the simple interest on £300 for three years at 5 per cent.?
16. Three boys can eat a pudding in 10 minutes. How quickly can 12 boys eat it?
17. How many times is  $\frac{1}{4}$  contained in  $13\frac{1}{4}$ ?
18. How many square yards of paper will just cover a table 6 ft. long and 3 ft. broad?

### Age 14.

19. A blackboard is 3 ft. broad and 4 ft. long. How many inches of wire would just go round it?
20. One-third of my stick is in the water; one-quarter is in the mud; 15 in. is above water. How long is the stick?

In administering this test each question is to be recited clearly, slowly, and with due emphasis. One minute is allowed for each of the problems up to the end of year 12, and one and a half minutes are allowed for the remaining problems. In all cases the question should be repeated once after the first half-minute. The child himself should not see the question. Nothing is to be written in explanation by the examiner, either on paper or on the blackboard; and nothing (except, in a group test, the answer) is to be written by the child.

*Scoring.* The measure of ability consists in the total number of problems correctly answered, whether actually or by implication. To find the total score take five times the number of problems correctly solved for ages 8, 9, 10, 11, and 14, and twice the number of problems correctly solved for ages 12 and 13, and add to them the number of all the easier problems (ten problems for each year from age 4 inclusive) which were not themselves given because presumably well within the child's capacity.

# METHODS OF CHOOSING A CAREER

## VII

### VOCATIONAL GUIDANCE RECORD BOOK

Name \_\_\_\_\_

Address \_\_\_\_\_

School \_\_\_\_\_ Class \_\_\_\_\_

Age \_\_\_\_\_ Date of Birth \_\_\_\_\_

Recommendation to School Conference \_\_\_\_\_

Result:

#### 1. Home and Family Circumstances

HOME: Type of home: \_\_\_\_\_ Number and size of rooms: \_\_\_\_\_

Condition of home: \_\_\_\_\_ Prosperity of home: \_\_\_\_\_

Character of neighbourhood: \_\_\_\_\_  
Wages and regularity: \_\_\_\_\_

FAMILY: Father's occupation: \_\_\_\_\_

Mother's occupation: \_\_\_\_\_

Family living in house: \_\_\_\_\_

Wage-earners: \_\_\_\_\_ Non-wage-earners: \_\_\_\_\_

Family conditions: \_\_\_\_\_

Health of family: \_\_\_\_\_

Family history: \_\_\_\_\_

CHILD: General physical and mental condition: \_\_\_\_\_

Past history: \_\_\_\_\_

Parent's opinion of child: \_\_\_\_\_

Submissive

Shy

Dependable

Good-tempered

Excitable

Nervous

Tidy

Cheerful

Persevering

## APPENDIX

Hobbies :

Special vocational opportunities :

Vocational plans—Parent's :                      Child's :

Need for immediate employment :              Reliability of replies :

Degree of co-operation given by parent :

### 2. Physical and Medical Condition

Personal hygiene :

Height.

Weight.

Vision.

Past illnesses :

Present conditions :

General appearance :

Nutrition :    1.   2.   3.

Muscular development. 1. 2. 3.

Glands :

Skin :

Malformations :

Hernia :

Throat and nose :

Colour vision :

Hearing (whisper) :

Digestive system :

Teeth :

Muscular and nervous system :

Tremor :

Dynamometer : R.

Walk :

Romberg :        L.

Respiratory system :

Lungs :

Heart :

Circulatory system :

Pulse-rate :

Vascular tone :    1.   2.   3.

General type :

Occupational contra-indications negating occupations that involve :

Standing      Climbing                      Exposure      Nervous strain

Sitting        Dusty atmosphere      Dry hands      Muscular strain

Good sight    Good hearing              Cold            Indoor work

Speech        Damp                        Heat            Colour perception

Positive occupational indications :

Special notes (if any) :

# METHODS OF CHOOSING A CAREER

## 3. General Intelligence

### A. GROUP TESTS

Name of test:

Test    1.    2.    3.    4.    5.    6.    7.    8.    9.

Score:

Total:

Assessment:

### B. INDIVIDUAL TESTS (Stanford revision of Binet-Simon Scale)

Vocabulary:                      Credit presupposed                      Years    Months

Credit earned at VII.

VIII.

IX.

X.

XII.

XIV.

XVI.

XVIII.

Mental Age: \_\_\_\_\_

Age: \_\_\_\_\_

Mental Ratio: \_\_\_\_\_

Assessment:

### C. NON-VERBAL GROUP TEST

Test    1.    2.    3.    4.    5.    6.    7.    8.    9.

Score:

Test    10.    11.    12.    13.    14.    15.    16.    17.    18.

Score:

Total:

Assessment:

### D. PERFORMANCE TESTS

Test    1.    2.    3.    4.    5.    6.    7.    8.    9.

Score:

Mental Age:

### FURTHER TESTS (IF ANY)

Test    10.    11.    12.    13.    14.    15.    16.    17.    18.

Score:

Mental Age:

Median Mental Age:

Mental Ratio:

Assessment:

Remarks:



## APPENDIX

### 4. Manual Dexterity Series

Group Tests      1.      2.      3.      4.      5.      TOTAL SCORE

Final Score:

Individual Tests

1.    2.    3.    4.    5.    6.    7.    8.    9.    TOTAL SCORE

Final Score:

Assessment:

Remarks:

### 5. Mechanical Abilities

GROUP TEST

1.      2.      3.      4.      5.      6.

Errors:

Time:

Score:

Total:

Assessment:

INDIVIDUAL TESTS

1.      2.      3      4.      5.

Test:

Errors:

Time:

Score:

Remarks:

Assessment:

### 6. Interests Test (Occupational)

*Name of Trade Group*      *Score*

1.

2.

3.

4.

5.

6.

7.

Total

Assessment

# METHODS OF CHOOSING A CAREER

## 7. Temperament (compiled from separate reports by investigators)

### General appearance:

Neatness	.	.	.	a	b	c	d	e	
Cleanliness	.	.	.	a	b	c	d	e	
Expression	.	.	.	a	b	c	d	e	
Manner	.	.	.	.	Shy, nervous, restless, anxious, cheerful, dull, easy				

### Quality of speech:

#### Special traits:

Assertive	.	.	a	b	c	d	e	Submissive
Ambitious	.	.	a	b	c	d	e	Unambitious
Initiative	.	.	a	b	c	d	e	Lacks initiative
Leadership	.	.	a	b	c	d	e	Poor in leadership
Constructive	.	.	a	b	c	d	e	Lacking in constructiveness
Quick	.	.	a	b	c	d	e	Slow
Alert	.	.	a	b	c	d	e	Absent-minded
Careful	.	.	a	b	c	d	e	Careless
Self-confident	.	.	a	b	c	d	e	Diffident
Calm under pressure	a	b	c	d	e			Distressed under pressure
Control of attention	a	b	c	d	e			Poor control
Energetic	.	.	a	b	c	d	e	Lethargic
Persistent	.	.	a	b	c	d	e	Soon gives up
Reliable	.	.	a	b	c	d	e	Unreliable
Industrious	.	.	a	b	c	d	e	Lazy or intermittent
Co-operative	.	.	a	b	c	d	e	Not co-operative
Sociable	.	.	a	b	c	d	e	Solitary
Tender	.	.	a	b	c	d	e	Lacking tenderness
Fearless	.	.	a	b	c	d	e	Timid
Desire for change	a	b	c	d	e			Contented with monotony
General emotionality	a	b	c	d	e			Unemotional

### Remarks:

## APPENDIX

### 8. Summary

1. Home:
  2. Health:
  3. Intelligence:      A.              B.              C.              D.              E.
  4. Manual operations:
  5. Mechanical ability:
  6. Interests:              Papers              Things              Persons
  7. Temperament:
  8. Attainments at school:
- Special notes:

Views of Investigators at Conference

Action to be taken:

### 9. Second Examination

Test Details

Special Notes (if any):

### 10. School Attainments and Teachers' Reports

*Number of Pupils in Class:*

*Place in Class:*

	Mark	Remarks		Mark	Remarks
ARITHMETIC	.	.	DRAWING	.	.
ENGLISH:	.	.	MANUAL WORK	.	.
Reading	.	.	(boys)	.	.
Composition	.	.	NEEDLEWORK	.	.
Spelling	.	.	(girls)	.	.
Writing	.	.	LAUNDRY	.	.
Literature	.	.	COOKERY	.	.
HISTORY	.	.	DRILL	.	.
GEOGRAPHY	.	.	SWIMMING	.	.
SCIENCE	.	.	GAMES	.	.
			MUSIC	.	.

*Attendance—generally during school life: . During last two years: .*

## METHODS OF CHOOSING A CAREER

### TEACHER'S REPORT:

Opinion of:

General proficiency in school subjects:

Special skill in any subject:

Child's intelligence	a	b	c	d	e
punctuality	a	b	c	d	e
conscientiousness	a	b	c	d	e
industry	a	b	c	d	e
politeness	a	b	c	d	e
ambition	a	b	c	d	e
orderliness	a	b	c	d	e
constructiveness	a	b	c	d	e
capacity for leadership	a	b	c	d	e
honesty	a	b	c	d	e

Personal opinion of any special feature of child's character (*e.g.*, initiative, quickness, humour, good-nature, curiosity, etc.):

Personal opinion of child's general disposition (*e.g.*, placid, anxious, highly strung, good-tempered):

Personal opinion of child's occupational fitness:

Notes on home circumstances or child's history:

Signature:

### II. Employment Record

Date	Name and Address of Employer	Details of Work	Remarks (relative to visit of Investigator)	Date of Visit

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